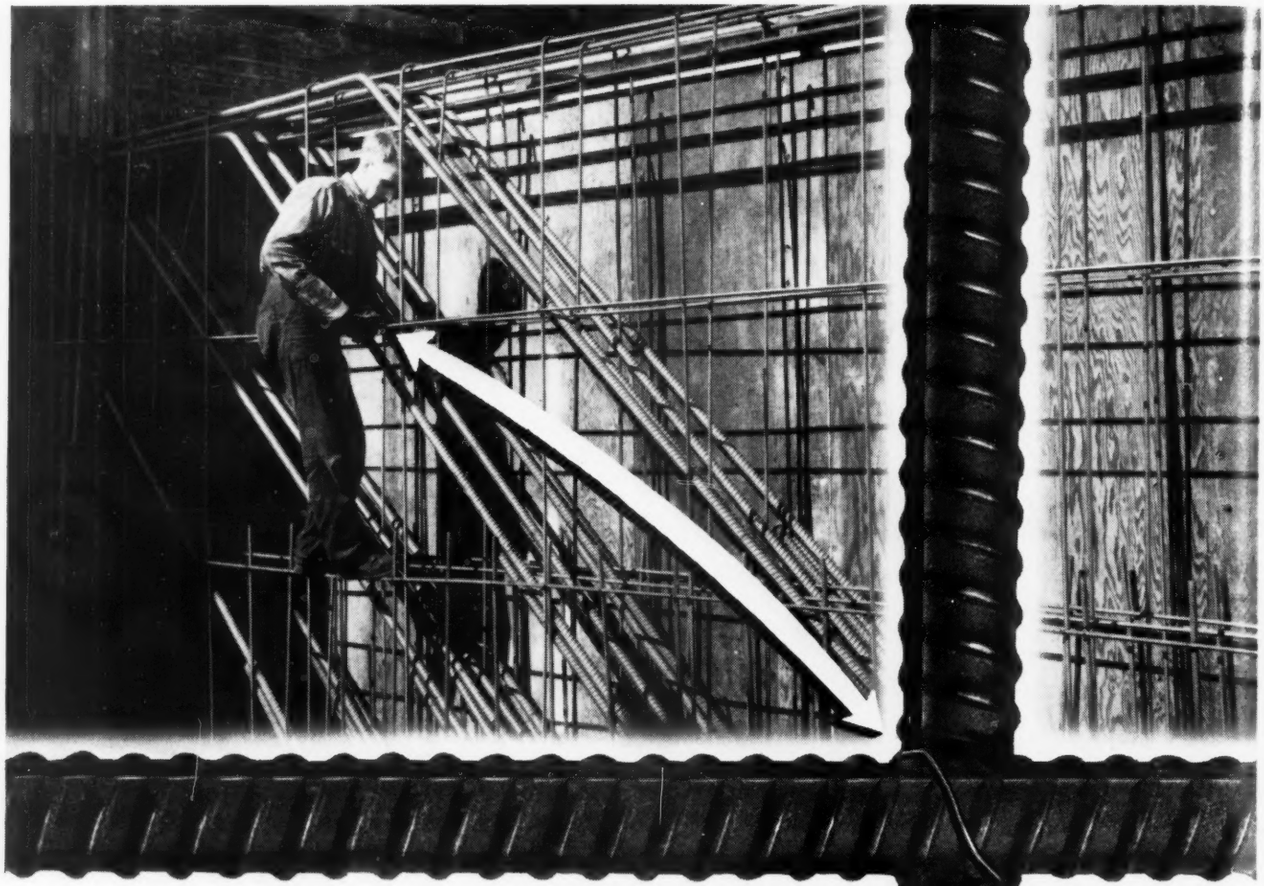
Construction Methods

NOV. 1947

A McGRAW-HILL PUBLICATION



A Single Turn Holds Firmly

. . . with HI-BOND Reinforcing Bars

Contractors like the ease with which Inland Hi-Bond re-bars can be tied together. When placed side by side or crossed, their helical ribs interlock with each other and stay anchored. Only one strand of wire is needed to make a firm joint that will easily support a heavy man.

The closely spaced, deeply corrugated, reversed helical ribs also provide greater bonding strength, utilizing the strength of the steel more fully and providing a more efficient structure. Their high resistance to slip also reduces the width of tensile cracks in the concrete.

Unfortunately, the present demand greatly exceeds the supply. To make larger tonnages of Hi-Bond available to you, we have licensed other steel companies to make this superior bar. Inland Steel Co., 38 S. Dearborn St., Chicago 3, Ill. Offices: Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, and St. Paul.

Write for HI-BOND Bulletin

INLAND HI-BOND RE-BARS

OTHER PRODUCTS

- STRUCTURALS
- PLATES
- SHEETS
- STRIP
- BARS
- TIN PLATE
- PILING
- FLOOR PLATE
- RAILS
- TRACK ACCESSORIES

INLAND STEEL

A. E. PAXTON, *Publisher*

Construction Methods

WALDO G. BOWMAN, *Editor*

THE CONSTRUCTIO MAGAZINE WITH PICTURE POWER

Established 1919

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Volume 29 **NOVEMBER 1947** Number 11

CUTS AND FILLS

HERE'S one reason construction costs are high: A contractor in the New York area set up a building job to pour footings direct from transit mixers. When the first mixer backed up to the forms all laborers walked off the job, demanding that the concrete be wheeled to place. After a two-day shutdown, with fall frosts imminent and snowy weather not too far off, the contractor capitulated rather than delay job progress.

SPEAKING of contractor labor trtoubles, you seldom see the contractor's side of the dispute even mentioned in the daily press. Lack of a sense of public relations, or else an unwarranted fear of worsening their troubles, makes contractors reluctant to talk for publication. They are not alone in this respect, for industry in general does a bum job in presenting its case in labor disputes.

THE ASSOCIATED GENERAL CONTRACTORS bit off one great big chunk at their recent Des Moines meeting when they accepted the invitation (practically a demand) of the Corps of Engineers to sponsor 100 reserve military construction battalions and units. It will be a difficult program to carry out, but one in which the construction industry simply must cooperate in the interests of national security and welfare. However, it is no tougher job than the contractors have successfully tackled in the past.

SO FAR AS the construction industry is concerned, there is no difference between the work done by the Corps of Engineers and the Seabees during wartime. Now that the services are unified under the Department of Defense, why not unite all military construction units instead of having them compete for men, materials and machines as was the case in the last war?

CONSTRUCTION SECTION SESSIONS at the National Safety Congress in Chicago last month were well worth attending. High spot of the program was a series of skits, acted out by contractors and insurance men, vividly portraying the value of construction safety. They impressed those in attendance with the importance of planning safety into the job in advance, and proved that a planned safe job is the most efficient and economical job. Incidentally, contractors can't afford not to be members of the Construction Section, National Safety Council. Basic membership costs only $30 per year.

CONTRACTORS are now offered alternate proposals in bidding Veterans hospitals according to a sensible new plan announced by the Office of Chief of Engineers, responsible for the hospital construction program. Bids will be received for an entire project, and, as an alternate, for the main building without mechanical and electrical work. On multiple-building projects the alternate will also split off auxiliary structures. Contract will be let on the lowest over-all bid or combination.

IN THIS ISSUE

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An Operator's

NOT ONLY THE WORLD'S LARGEST, MOST POWERFUL ..

"Driving the 19 is like fingering piano keys compared to operating the conventional tractor," —
says L. Rosier, operator for J. R. Griffith Co., Racine, Wis.

Yes, it's a pleasure to operate the NEW Allis-Chalmers HD-19, hydraulic torque converter tractor. Everything possible has been done to make the operator's job easier.

Shifting is practically eliminated. There are only TWO forward gear ratios — 0 to 3.0 and 0 to 7.0 m.p.h.; ONE reverse, 0 to 5.5. Torque converter makes this possible — automatically selects the maximum speed in each of these wide speed ranges at which load can be moved.

No fighting with steering levers and brakes, either. There's hydraulic, finger-tip steering — just a slight pressure on the lever and the tractor turns immediately — and stays turned, no bouncing back. For a full turn, the slight pressure on the lever plus resting the foot on the self-energizing brake does the job — no tiresome pulling and pushing.

Other operating advantages include electric starting, a new type, adjustable split seat . . . wide arm rests . . . adjustable brake pedals . . . full visibility . . . comfortable foot rests and a clean platform.

A faster-working, more powerful tractor, more easily operated, means greater production . . . more yards moved day in and day out.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.


ALLIS-CHALMERS
Weight; 40,000 lbs.
Horsepower; 163 at flywheel
Dream Tractor
...HD-19 is World's Easiest-to-Operate, Most Comfortable Tractor
ORIGINATOR OF THE TORQUE CONVERTER TRACTOR

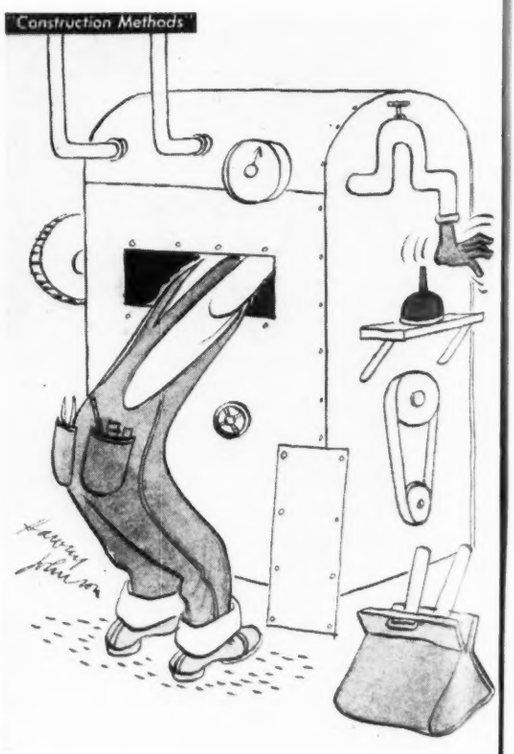
THE JOB JESTER

CARTOONS DRAWN FOR CONSTRUCTION METHODS

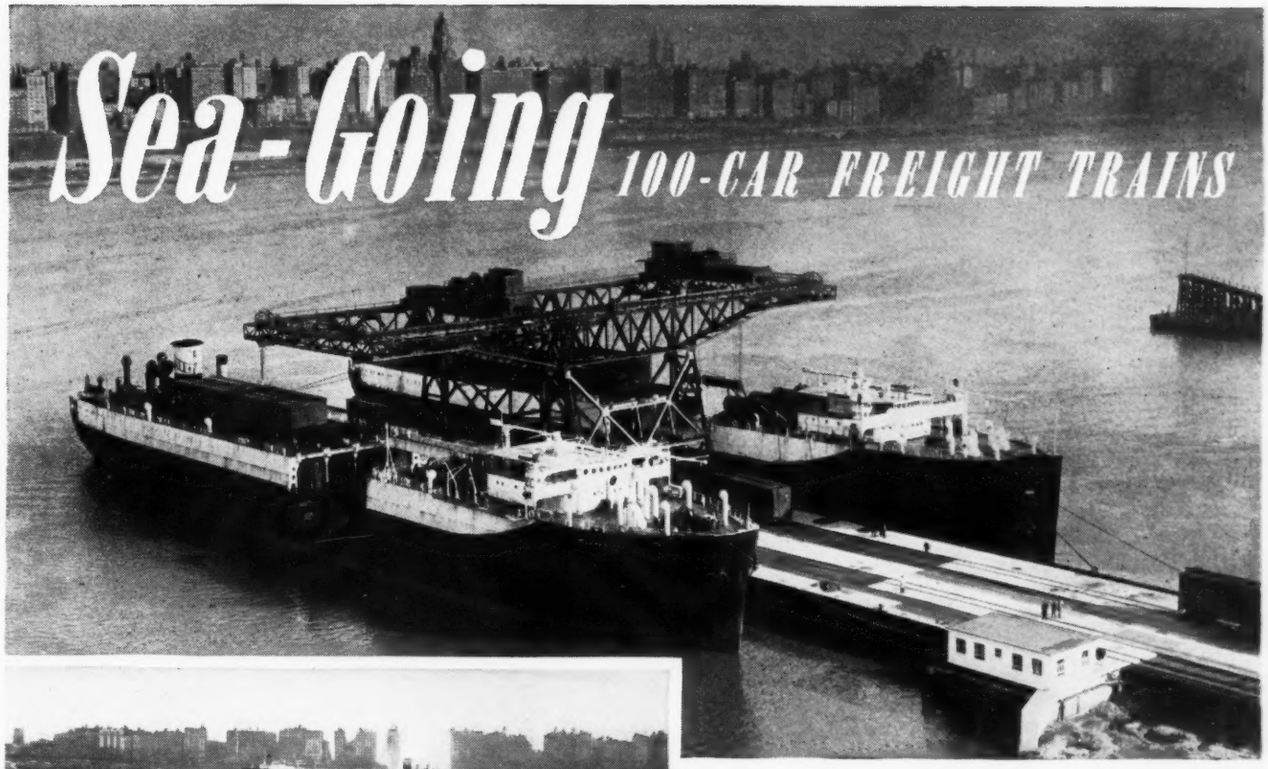
"It must be lunch time. Here comes Mooney."

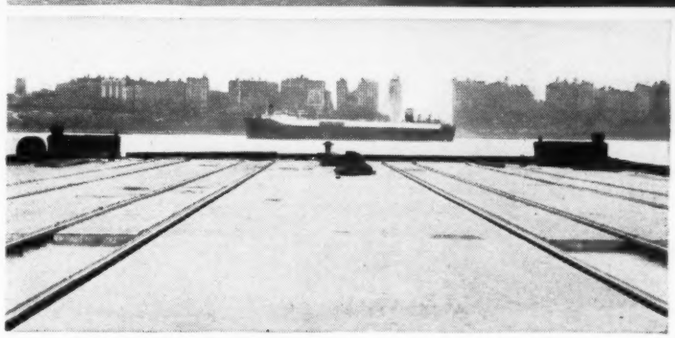
"Just like that loafer . . . turn my back for a minute and he disappears."

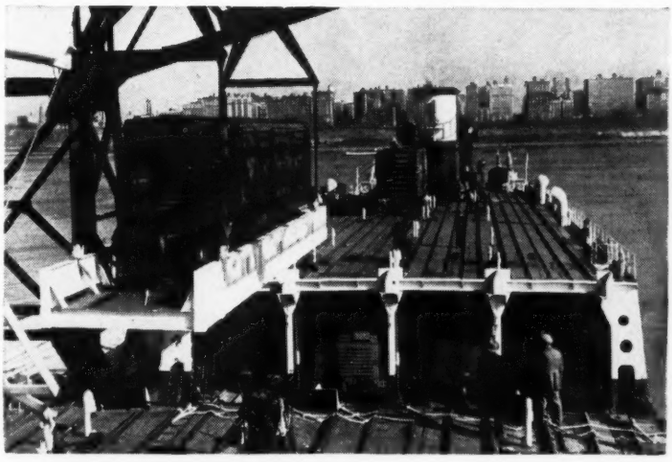
"Goodbye, dear. Here comes my ride."



Sea-Going 100-CAR FREIGHT TRAINS







'INCOR' HELPED SPEED WINTER WORK ON NEW SEATRAIN PIER

A Burbank of transportation crossed a ship and a freight car and bred the Seatrain . . . vessels 487 ft. long, 63 ft. beam, with four decks, laid with a mile of track, holding 100 freight cars. Seatrains run weekly between New York, New Orleans and Texas City, with stops at Havana.

Post-war service was resumed last March. Seatrain's 600-ft.-long, open-deck, concrete pier at Edgewater, N.J., had to be completed last Winter. Dependable 'Incor' high early strength helped speed cold-weather concreting, minimized heat-protection problems — and costs. Good design, good workmanship, good cement — result, a ship-shape pier for a ship-shape operation.

Use 'INCOR' 24-HOUR CEMENT for Winter work . . . save time, money and worry. Heat-cured only ONE day, 'Incor'* concrete is service strong, safe from freezing . . . 28-day strengths are 25% to 30% higher than ordinary concrete cured 3 days. America's FIRST high early strength Portland cement saves 2 days' heat-protection on each pour . . . cuts form and tarp costs in half. Backed by 20 years' outstanding performance! *Reg. U. S. Pat. Off.

Owner: **SEATRAIN LINES, Inc.,** New York; Contractor: **J. RICH STEERS, Inc.,** New York; Engineers: **HARDER, BARBATO & CIAMPA,** New York. 'Incor' Cement through: **THOMAS HENRY MATERIAL Co.,** West New York, N. J.

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS. KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK • PHILADELPHIA • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 25,500,000 BARRELS ANNUAL CAPACITY

EUCLIDS Speed Tough Highway Job

IN WEST VIRGINIA FOR VECELLIO and GROGAN

Rugged construction of Rear-Dump Euclids withstands the impact of loading heavy excavation by large shovels.

● Rebuilding the 10 mile Pineville-Welch highway required moving 900,000 cubic yards of earth and rock. From one of the deepest cuts in West Virginia road construction, 185 feet in depth, more than a quarter of a million cubic yards of heavy excavation were hauled for fill. Rear-Dump Euclids of 15-ton capacity were loaded by 1½ to 2½ cubic yard shovels.

Vecellio and Grogan used five Euclids to move most of the excavation on this contract. Because of their simple but rugged design the Rear-Dump Euclids delivered big yardages efficiently day-after-day. This dependable performance, combined with ample power and speed, cut hauling costs and kept the job on schedule.

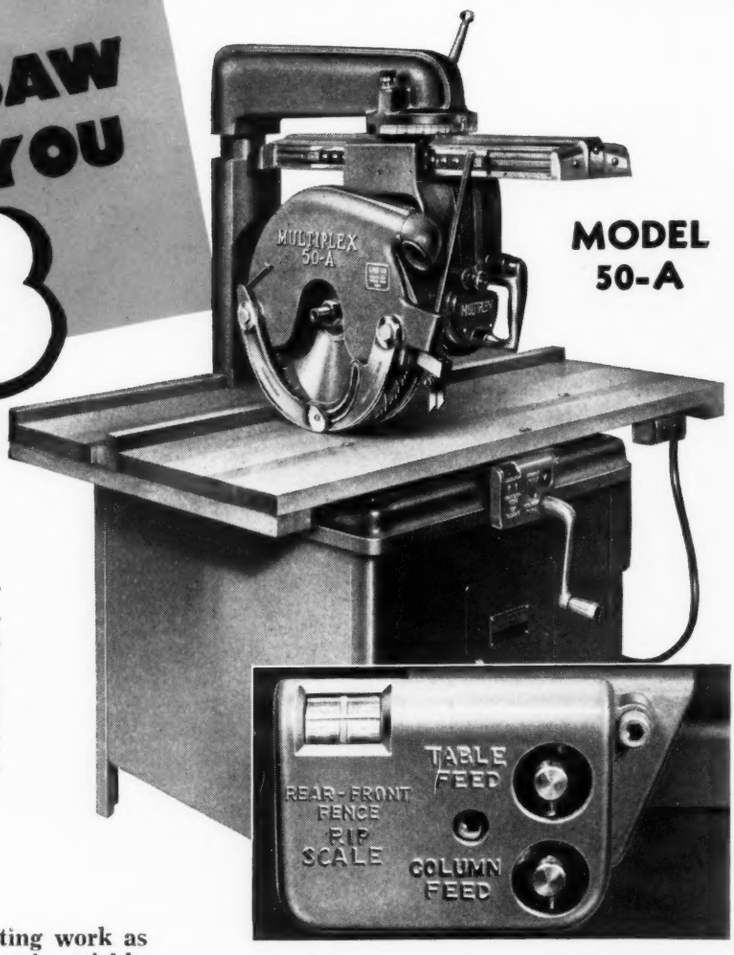
Your Euclid representative or distributor will be glad to show you how Euclids are built for low cost hauling on a wide range of jobs.

Because of the high dumping angle and distance of the chute from the rear wheels, the load is dumped over the bank.

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

EUCLIDS *Move the Earth*

CHOOSE THE SAW THAT GIVES YOU ALL 3



PRODUCTION

Where value is measured in terms of performance and production, general contractors, lumber yards and industrial users depend on the speed and capacity of the Multiplex 50A. Powered by 3, 5, 7½ or 10 H.P. motors, these sturdy 50A's are well suited for both mill work and production sawing. Roller bearing glide action provides the same ease of operation found in smaller capacity models.

PRECISION

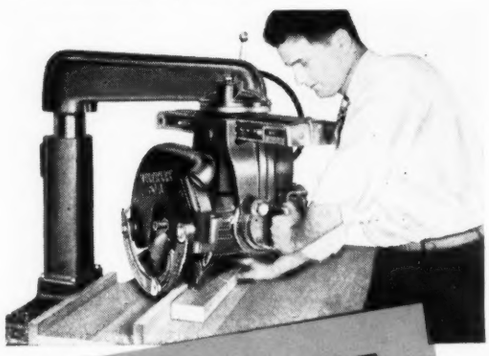
The Multiplex was designed for careful exacting work as well as production. On any operation the saw is quickly positioned with the use of easily legible, rip, bevel and miter scales, accurately calibrated and conveniently located. Saw moves with smooth roller bearing precision on nitralloy track.

Easily legible scales, conveniently located at front of machine, accurately measures width at rip from either front or rear fence.

Exclusive with Multiplex -- left as well as right hand mitering up to 90°.

VERSATILITY

Exclusive with all Multiplex saws -- the center pivoted track which permits left as well as conventional right hand mitering up to 90°. This "Versatile Elbow" feature also makes possible an unlimited number of saw positions. Another Multiplex advantage -- the movable table, controlled by conveniently located crank, brings the work to the operator, increases cutting capacity and steps up operational speed.



For lighter work investigate models 30A and 40A. Write today for literature and the name of your nearest Multiplex dealer.

CROSS CUT · RIP · BEVEL RIP · BEVEL CUT OFF
MITER · COMPOUND MITER · PLOW · SHAPE
DADO · RAFTER NOTCH · TENON · RABBET

RED STAR PRODUCTS, INC.
3455 VEGA AVENUE
CLEVELAND 13, OHIO, U.S.A.

MULTIPLEX
The Radial Arm Saw
WITH THE EXCLUSIVE
VERSATILE ELBOW

A development of
B.F. Goodrich
FIRST IN RUBBER

These tires have built-in bumpers

A typical example of B. F. Goodrich development in tires

HERE is the rear end of one of the biggest trucks ever built. It was used to haul 45 tons of dirt at a clip—mountains of dirt to fill in the tide-water mud on which the San Francisco airport is being built. They even built a 3½-mile haul road over which to carry the millions of yards of earth needed for the fill.

Tires on jobs such as this often fail because of bruises or blow-outs. That's mighty expensive when tires cost $600 or $700 each—and a tire repair bill may run $90.

After working on this problem, B. F. Goodrich developed a new way to protect big off-the-road tires from impacts. They put a shock-shield—four layers of rubber insulated cord—under the tread of every tire. It's a built-in bumper that absorbs shocks and blows. It protects the inner tire body; helps prevent tread separation. Tire life is lengthened.

Then they improved the shock shield by making it of nylon cord. The shock shield provides a four-way savings for users: (1) Average tire mileage is increased. (2) Tires have greater resistance to bruises. (3) There's less danger of tread separation. (4) More tires can be recapped.

This development and the development of a simpler form of nylon shock shield for highway truck tires are typical of the constant improvement being made in all types of tires by B. F. Goodrich.

Find out more about this new improvement in truck tires before you buy. It costs you nothing extra. *The B. F. Goodrich Co., Akron, Ohio.*

Truck Tires BY

B.F. Goodrich

"I told 'em that Rex had a fast discharge!"

Yes, Rex Moto-Mixers have the fastest discharge of any truck mixer . . . *even with lowest slump mixes.* The big 34-inch discharge opening is unrestricted.

Rex Moto-Mixers are the only truck-mixers that mix in the discharge direction so that the batch is always right up at the opening . . . ready to come out in a hurry the second the discharge is opened. There is no hesitation . . . no segregation. Deep spiral scoops get the batch out *fast.* Combine this exclusive high-speed discharge with the other outstanding Rex Moto-Mixer features . . . fast charge, Hi-Lo mixing, accurate water system, chain drum drive . . . and you'll see why you'll get more trips per truck per day.

For all the facts, see your Rex Distributor or write for Bulletin No. 46-8. Chain Belt Company, 1664 W. Bruce St., Milwaukee 4, Wis.

CHAIN BELT COMPANY *of* MILWAUKEE

REX

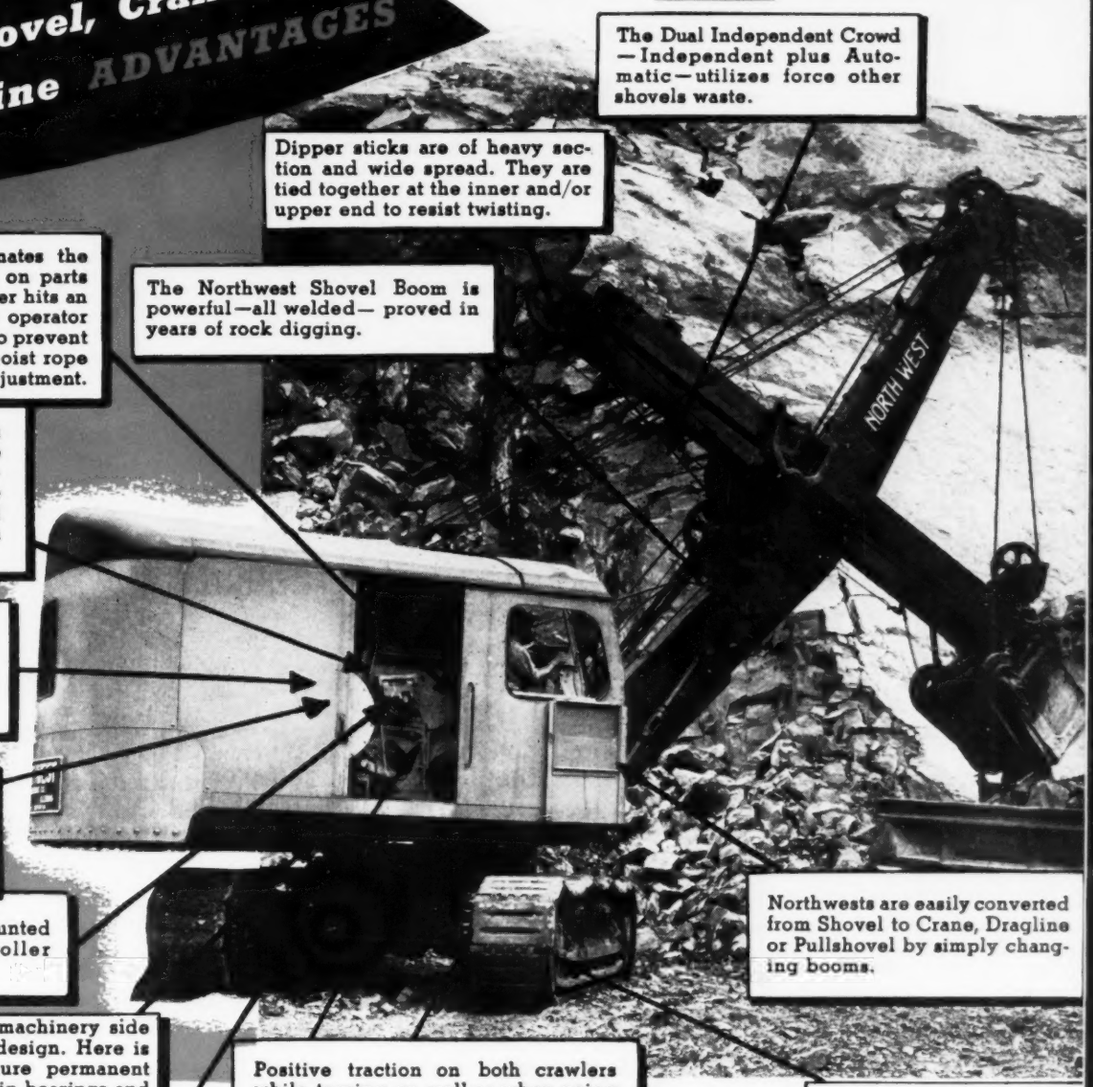
CONSTRUCTION MACHINERY

PUMPS PAVERS PUMPCRETES MOTO-MIXERS MIXERS

SUCCESSFUL CONTRACTORS

. . . keep successful with good equipment!

PLAN ahead to have these Shovel, Crane and Dragline ADVANTAGES



The Dual Independent Crowd — Independent plus Automatic — utilizes force other shovels waste.

Dipper sticks are of heavy section and wide spread. They are tied together at the inner and/or upper end to resist twisting.

The Cushion Clutch eliminates the effects of shock overloads on parts under power when the dipper hits an immovable rock, gives the operator time to throw out the clutch to prevent engine stalling, lengthens hoist rope life and reduces clutch adjustment.

The Northwest Shovel Boom is powerful—all welded— proved in years of rock digging.

The "Feather-Touch" Clutch Control reduces day-end fatigue and increases output. The operator always has the feel of the load, release is positive and there is no danger of shutdown because of control failure.

Uniform Pressure Swing Clutches take the grabs and jerks out of swinging, assure cooler running, increased life and reduced adjustments.

Power take-off is through helical cut gears mounted on ball or roller bearings, and running in oil. There is no finer speed reducer.

All high-speed shafts are mounted on self-aligning ball or roller bearings.

Northwests are easily converted from Shovel to Crane, Dragline or Pullshovel by simply changing booms.

Cast steel bases with cast steel machinery side frames are typical of Northwest design. Here is the strength and rigidity to assure permanent shaft alignment and reduce wear in bearings and gears.

Positive traction on both crawlers while turning as well as when going straight ahead on all machines over 1 yd. capacity assure power on both crawlers at all times. Northwests can travel where other machines have difficulty.

Alternate lugs on crawler shoes assure a self-cleaning action not found in the ordinary crawler.

Simplicity of design — few gears — few shafts — easy accessibility — assure low maintenance costs.

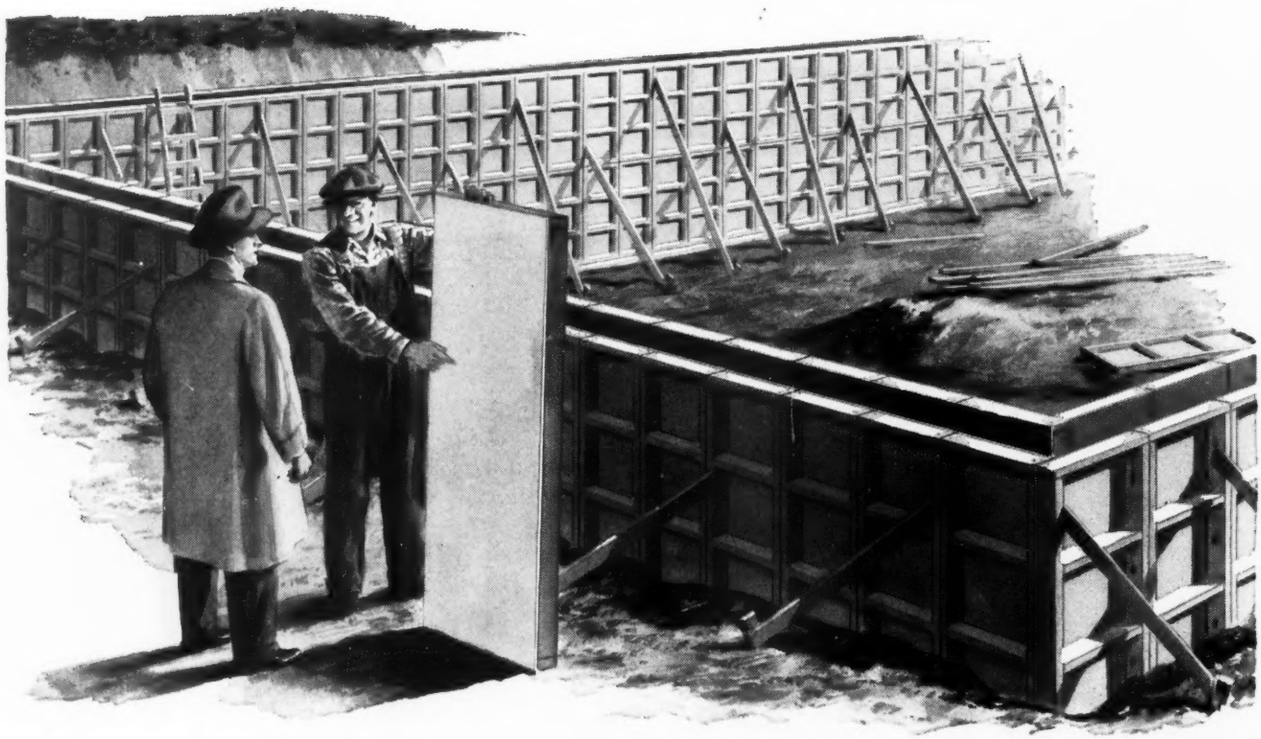
Travel gears are fully enclosed and run in oil. There is ample clearance beneath the gear housing.

NORTHWEST ENGINEERING CO., 1503 Field Bldg., 135 South La Salle St., Chicago 3, Ill.

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Plywood fortified with Kimpreg* . . . means smoother, longer-lasting concrete forms



New Plastic-Armored Plywood Cuts Ultimate Form Costs.

KIMPREG* plastic surfacing is fused to exterior grade plywood in manufacture to produce durable KIMPREG + Plywood. When wet, KIMPREG-surfaced plywood is 33 times more abrasion resistant than ordinary plywood... 15 to 25 times more water-resistant. Handled with reasonable care, KIMPREG + Plywood concrete forms can be re-used over 100 times. And they're less costly than steel forms.

Maintenance Costs Cut 50%.

Plywood panels protected with KIMPREG strip easier, clean faster, demand little oil and oiling labor. Because they are highly resistant to water, they won't swell . . . require no separation to dry. Light in weight, they're excellent for slab work. Greatly reduce overhead finishing time. Save labor—save money.

Surface Smoothness Equal to that of Steel Forms.

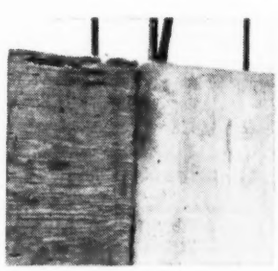
KIMPREG + Plywood forms provide a smooth, enduring concrete finish. Cut rubbing-down costs as much as 75%. Concrete won't stick to glassy smooth KIMPREG.

Get Full Information Today.

KIMPREG + Plywood panels are available through local plywood jobbers, and are also sold by plywood manufacturers under the trade names Laminex, Inderon and Westboard Industrial Plastic. For further information write to:

KIMBERLY-CLARK CORPORATION
Plastics Division • Neenah, Wis.

Compare →



A standard plywood form produced the rough-surfaced concrete on the left. Note how smooth the finish on the right looks—the work of a KIMPREG + Plywood form. Both panels have had many re-uses.

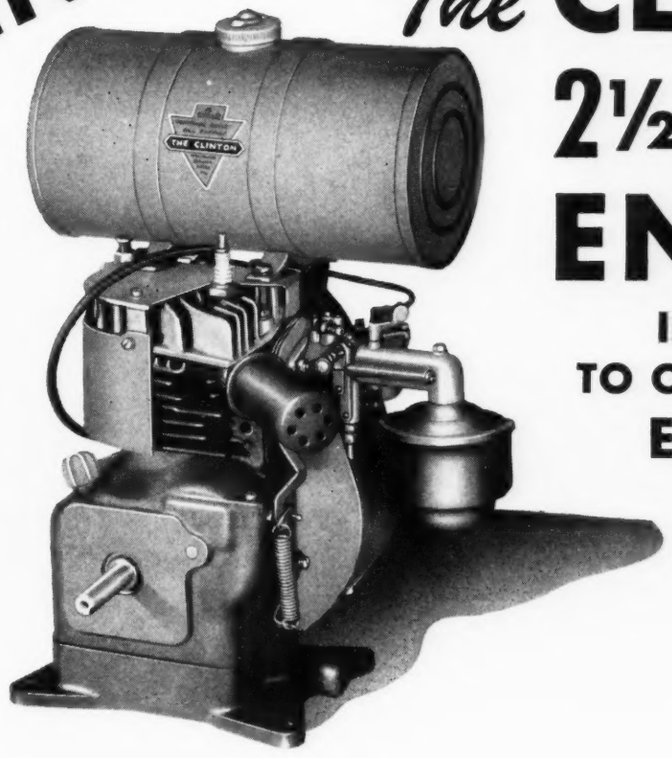
Kimpreg
REG. U.S. PAT. OFF.
PLASTIC SURFACING

A PRODUCT OF Kimberly Clark RESEARCH

Trademark Reg. U.S. Pat. Off.

MEET the NEW MEMBER . . .
of this FAMOUS FAMILY

INTRODUCING! *The* CLINTON 2½ to 3 H.P. ENGINE



IN ADDITION TO OUR 1½ to 2 H.P. ENGINES

4 CYCLE
The Precision Built
THE CLINTON
AIR COOLED ENGINE
THE CLINTON MACHINE CO.
CLINTON MICH. U.S.A.

IT'S POWERED BETTER WHEN CLINTON POWERED

DESTINED TO BE FAMOUS

Here's a husky—strong—more H. P.—which can stand by itself. . . . We expect a great future for this 2½ to 3 H. P., 4-cycle, air-cooled engine. It is now in production by the world's largest manufacturer specializing in 1½ to 2 H. P. Gasoline Engines.

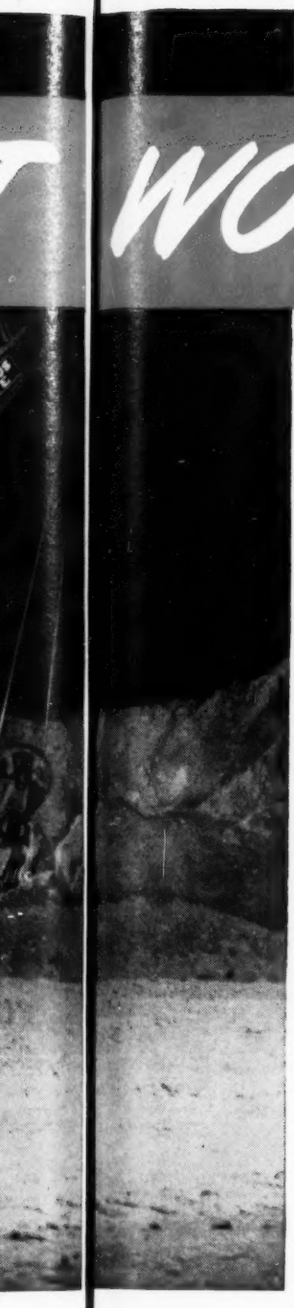
Yes, we expect great things of this engine. . . . It's New—It's Modern—It's the most outstanding advancement in the fractional H. P. Gasoline Engine field in years. The sound engineering design—the outstanding performance in tests—the acceptance by those who have seen it makes us believe we have a winner under any condition.

You'll welcome this finer quality engine—its DURABILITY—its ABILITY to stay on the job—its attractive PRICE are certain to give it a place in the heart of users, dealers and manufacturers employing compact air cooled power. After you've tested it on your own equipment, you will realize it's a winner.

CLINTON MACHINE COMPANY

Box 100 CM

CLINTON, MICHIGAN



WORK PROVES...

"EFFECTIVE LUBRICATION"

Reduces Maintenance Costs

WHEN machines must run on round-the-clock schedules, that's when you need "effective lubrication" — the ability of your lubricant to *stay in the bearings* despite heavy loads and rough service . . . to give extra long hours of protection. And for that, nothing beats *Texaco Marfak!*

Marfak is tops for bearings in truck chassis, tractors, bulldozers, shovels and other equipment — a tough, tireless lubricant that gives *longer lasting* protection because it prevents rust and seals out dirt and moisture. Saves you money on maintenance costs.

In wheel bearings, *Marfak Heavy Duty* forms a fluid lubricating film inside, retains its original consistency at the outer edges . . . thus sealing itself in, sealing out contaminants . . . assuring longer lasting protection with no need for seasonal change.

For engines — heavy-duty gasoline and Diesel — *Texaco Ursa Oil X*** assures top efficiency and economy. *Ursa Oil X*** is fully detergent . . . dispersive . . . highly resistant to oxidation. It keeps engines clean.

Save time and money by using Texaco Simplified Lubrication Plan. For full details, call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 E. 42nd St., N. Y. 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Start earlier in the spring .

with extra capacity

Haul More pay yards per year...with fewer delays from weather conditions

LE TOURNEAU LET EQUIPMENT

See your Le Tourneau Distributor NOW for complete information

. . . work later next fall

"B" TOURNAPULL

MORE FLOTATION — Extra big 24.00 x 29 tires on the new B Tournapull have tapered beads for lower pressures, more ground contact. Eliminates rim slippage . . . helps rig ride over soft spots . . . travel safely over sticky or slippery grades.

SURE-FOOTED TRACTION — New-type differential automatically supplies 4 times as much power to drive wheel on firmest footing . . . enables Tournapull to walk through deep mud, sand, snow and ice that would stall any ordinary dirtmover.

INSTANTANEOUS SPEED SELECTION — New constant mesh transmission provides instant acceleration . . . enables operator to change gear speeds anytime without loss of momentum or stopping to shift gears — a "must" where going is tough.

POSITIVE POWER STEER — Electric operated gear on yoke king-pin steers Tournapull and Scraper as one integral unit . . . keeps rig rolling in desired direction regardless of conditions underfoot. 90° turning radius increases safety and maneuverability.

FINGER-TIP ELECTRIC CONTROL — All operations are electrically controlled by individual motors, with convenient finger-tip control from dashboard. Reduces operator fatigue . . . makes entire operation safer, easier to control accurately — especially in bad weather.

DEPENDABLE POWER AND BRAKING — Husky 225 h.p. diesel engine provides ample power to pull through the toughest kind of going. Quick, non-swerving stops assured by big, multiple-disc air-brakes on all four wheels.

Tournapull—Trademark Reg. U.S. Pat. Off. C78

LETOURNEAU PEORIA, ILLINOIS — EXTRA-CAPACITY TOURNAPULLS

FOR LOWEST NET COST PER YARD

1 Smooth operating, new type retractable arm . . . strong, rigid, unbelievably light in weight and easy to operate all day.

2 All work is plainly visible at all times . . . no obstructions in the line of vision. It's easy to see every cut as it's being made.

NEW... NEW... NEW

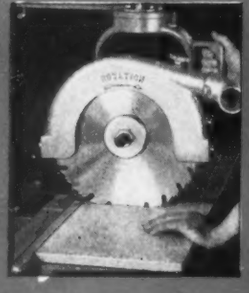
Radial SKIL* Saw Better 12 Ways

3 Accuracy to within 1/100 of an inch for the life of the machine gives you "picture frame" precision on every cut you make.

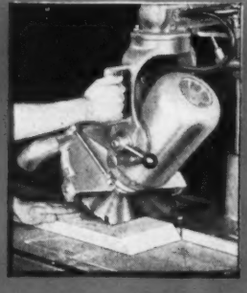
4 Double-row adjustable load carrying bearings on heat-treated, precision ground steel rails for constant alignment of arm.

5 All adjustments can be easily reached from the working position . . . no hide-and-seek for measurements or blade angle.

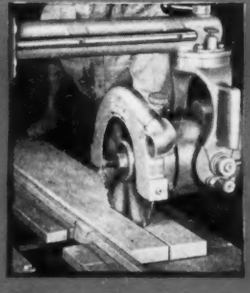
6 Finger-tip pressure is all you need . . . the saw does its work with a minimum of effort on newly designed retractable arm.



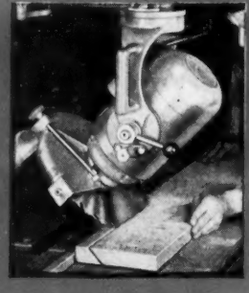
Cross-cut



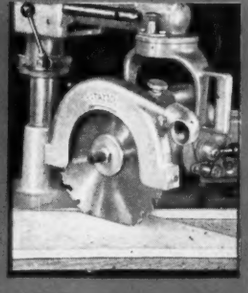
Bevel Cross-cut



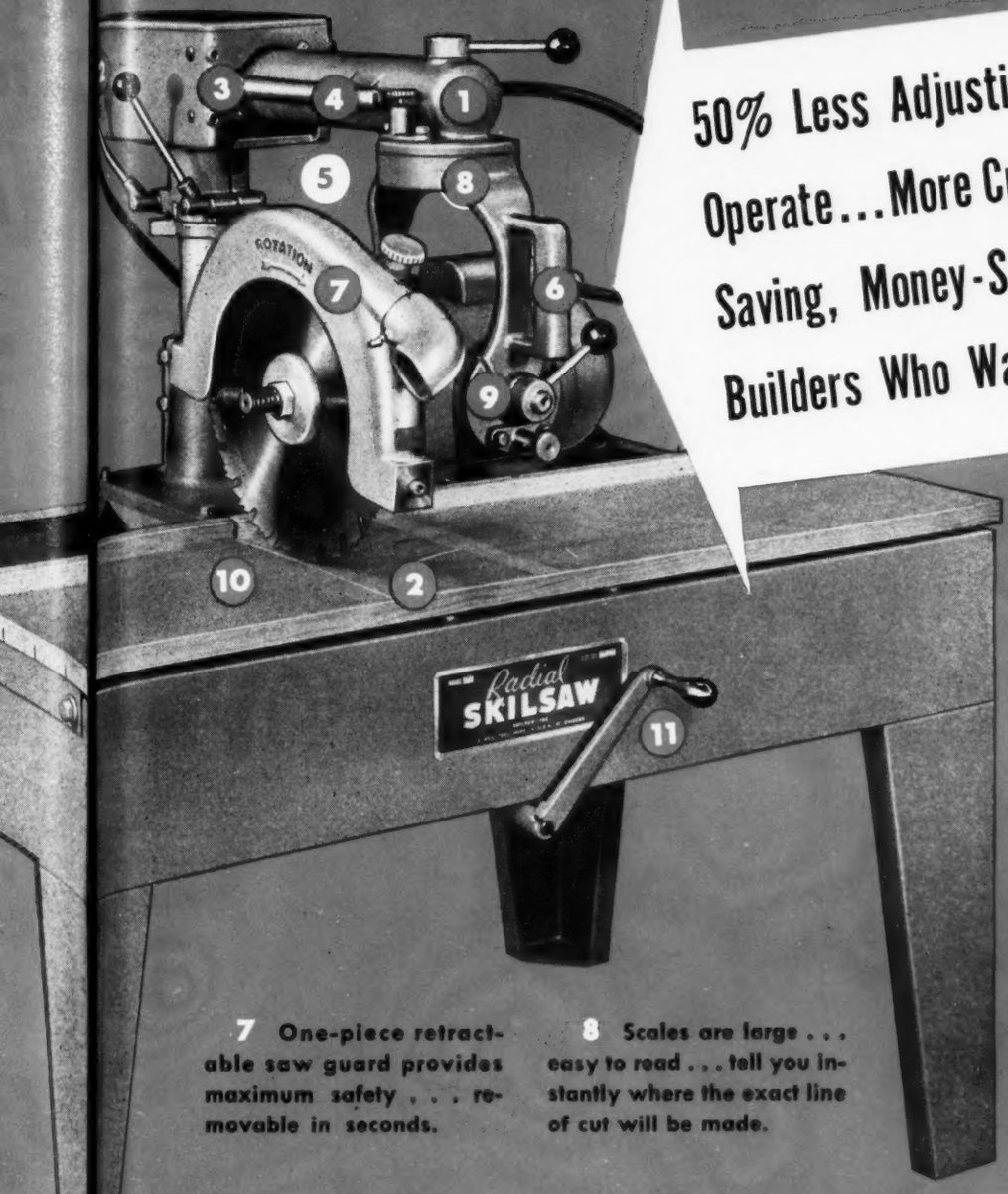
Rip



Bevel Rip



Miter



50% Less Adjusting Time... Easier to Operate... More Cuts per Day... 12 Time-Saving, Money-Saving Features... for Builders Who Want to Cut Their Costs

7 One-piece retractable saw guard provides maximum safety . . . removable in seconds.

8 Scales are large . . . easy to read . . . tell you instantly where the exact line of cut will be made.

9 Sturdy construction for years of hard use. Typical SKIL Tool quality throughout.

10 Plenty of room to set up jobs . . . with sawing head fully retracted it's easy to position the material to be cut.

11 Retractable elevator handle for quick, accurate adjustments on depth of cut . . . one full turn raises or lowers blade exactly ⅛ inch . . . half turn, 1/16 inch and so on.

12 Felt wicks keep rails free of dust and dirt at all times . . . a refinement that keeps Radial SKIL Saw working better... longer.

● 14 inch, 1½ and 2 h.p. models with maximum cut-off capacity 3⅛" x 14" . . . 16 inch, 3 and 5 h.p. models with maximum cut-off capacity 4⅛" x 13½".

See your Distributor today about a demonstration.

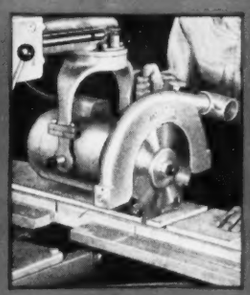
ELECTRIC PNEUMATIC
SKILTOOLS

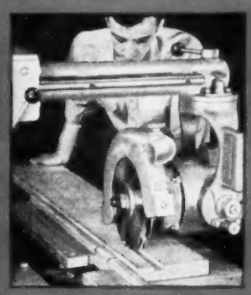
MADE BY SKILSAW, INC.

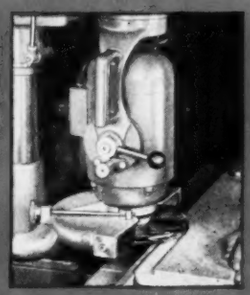
SKILSAW, INC.
5033 Elston Ave., Chicago 30, Ill.
Factory Branches in Principal Cities
In Canada: SKILTOOLS, LTD.,
64 Portland St., Toronto, Ont.

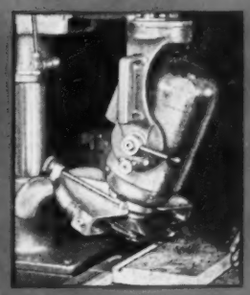
*SKIL Saw is made only by SKILSAW, INC.


Bevel Miter


Dado


Plough

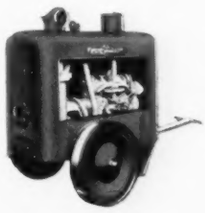

Rabbet


Bevel Rabbet

the 65th JAEGER PUMP used on the Normandie

64 Jaegers, in the below sizes, were supplied for the original salvage work:

2" and 3" portables



Compact 4" pumps

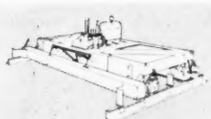
Big 6" and 8" units

Self-priming jetting pumps

No other self-priming centrifugal pumps in the world can compare with Jaeger "Sure Prime" for the volume and importance of the work they have handled. More generously powered, conservatively rated and weather-protected by overall enclosures, they have the capacity to move water for you at less cost per gallon and the stamina to pump continuously until they finish the job. Sold, rented, serviced by Jaeger dealers in 130 cities.

THE JAEGER MACHINE COMPANY, Columbus 16, Ohio

REGIONAL OFFICES: 8 E. 48th St. NEW YORK 17, N. Y. — 226 N. La Salle St. CHICAGO 1, ILL. — American Life Bldg. BIRMINGHAM 1, ALA.



Spreaders, Finishers

Concrete Mixers

Compressors

JAEGER *Engineered* **EQUIPMENT**

Truck Mixers • Hoists • Concrete and Bituminous Paving Equipment

EARTH moving problems turn into jobs that pay plenty of profits when International Diesels power the work!

More and more contractors are finding this out. They see how International Crawlers lug through heavy going to boil up capacity loads in their scrapers. And when the blades are up they see these outfits hurry to the fill to deliver big hourly yardage.

Then, when they discover how International's unbeatable operating economy keeps costs down, they know that here's *power that pays*. The low maintenance and fuel requirements of International Diesel Crawlers makes successful bidding and profitable results assured.

For facts about the benefits you get in these power-packed tractors, visit your International Industrial Power Distributor. Let him help you select equipment and the *power that pays*.

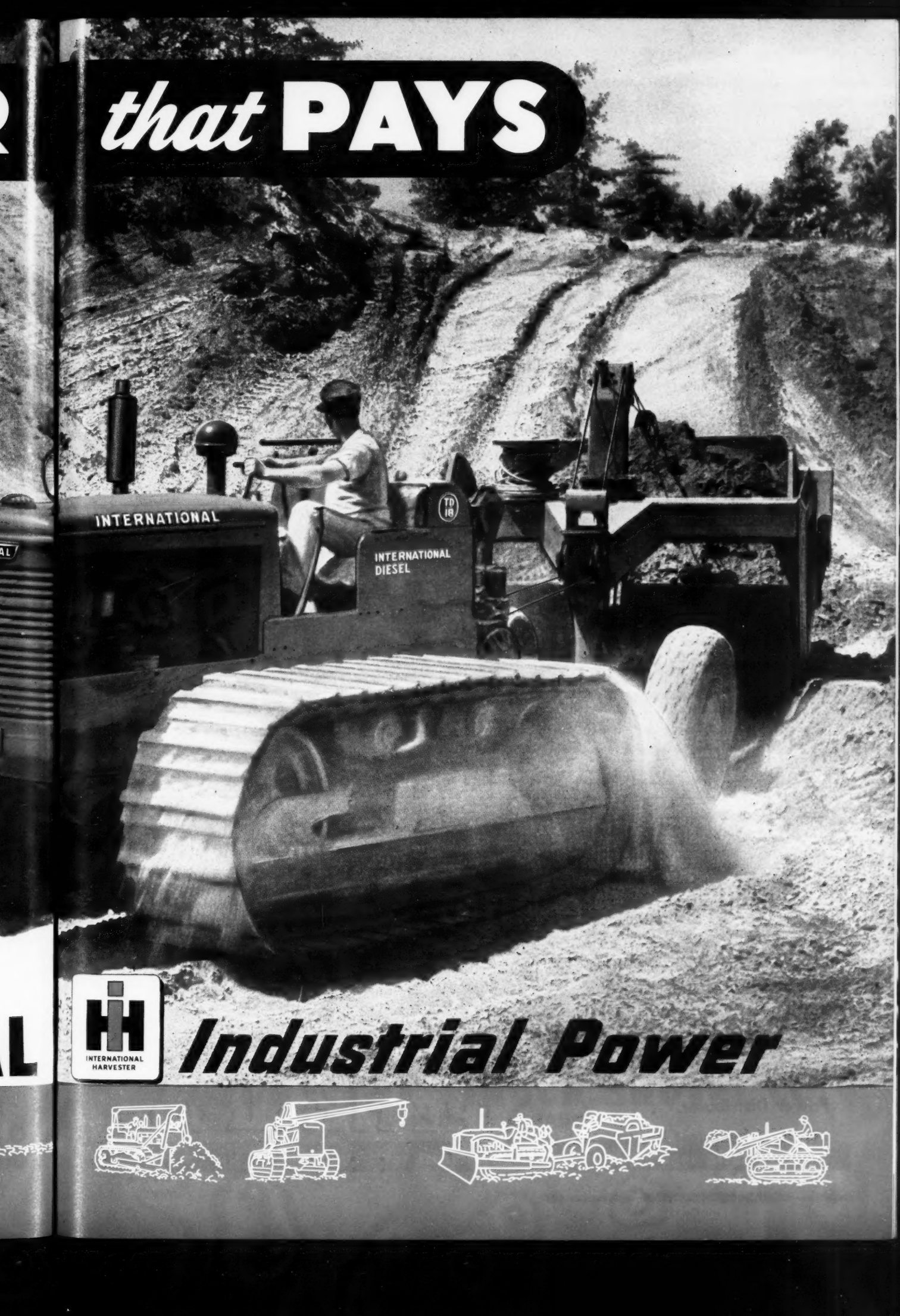
Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue **Chicago 1, Illinois**

CRAWLER TRACTORS
POWER UNITS
DIESEL ENGINES
WHEEL TRACTORS

INTERNATIONAL


that PAYS
INTERNATIONAL
INTERNATIONAL DIESEL
TD 18
INTERNATIONAL HARVESTER
Industrial Power

Another New HEIL Dozer

. . . designed for International TD-6 Tractors

. . . a brute for punishment, a little giant for work

This new hydraulic dozer is designed especially for small crawler tractors. It provides you with the following features—*features not available in any other unit of this size:*

Closed hydraulic system — all working parts are sealed away from destructive dust and grit. Costly maintenance time is reduced; profit-making on-the-job time is increased.

All "plumbing" is eliminated — there are no hoses or pipe connections to leak, vibrate loose, or otherwise cause delays. You save yourself considerable time and money.

Easy installation — the entire hydraulic system consists of a compact single-unit assembly that can be attached to the tractor with a minimum of time and effort. Again, you save money.

These are things that you, the owner, like — and here are a few things that appeal to your operators:

Fast moldboard action that is made possible by well-designed mechanical linkage between hoist and lift arm. Any desired position of the moldboard is maintained by a self-neutralizing valve. There is no bucking of pressure, no overheating of oil.

Scientifically contoured moldboard provides bigger load-carrying capacity. Reversible, replaceable cutting edges further help to reduce costs by maintaining digging efficiency.

Easy operation enables operator to place the blade exactly where he wants it. Quick-responding hydraulic control eliminates all physical effort — your men get more done and are less tired.

Complete visibility allows operator to see the moldboard on each side of tractor — making his work easier, more efficient.

You can see that this new dozer is just what you want. It has the dependability that keeps your maintenance costs down. It has the operating features that make it easy to move more dirt at bigger profit. Install this new Heil dozer on your TD-6, as soon as you can, and further increase the money-making usefulness of the tractor.

R-93

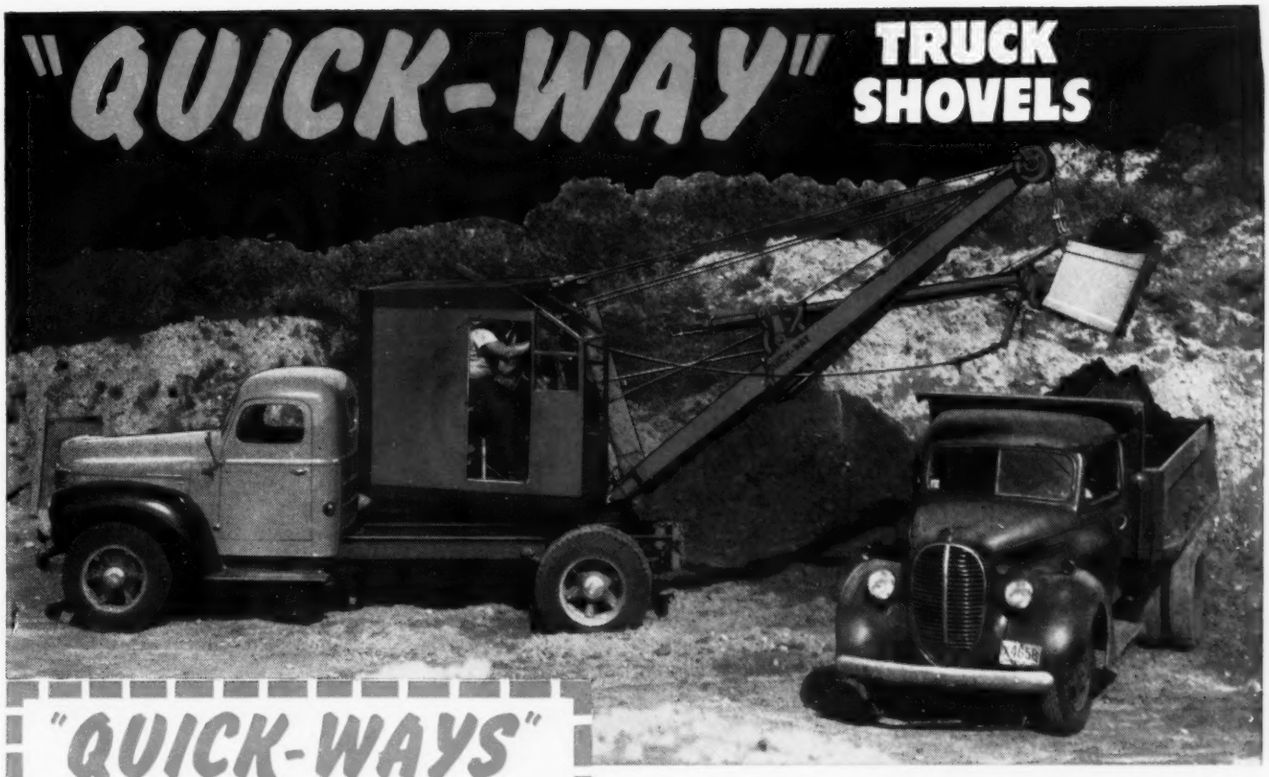
See your International Power Distributor.

Write us for latest literature . . .

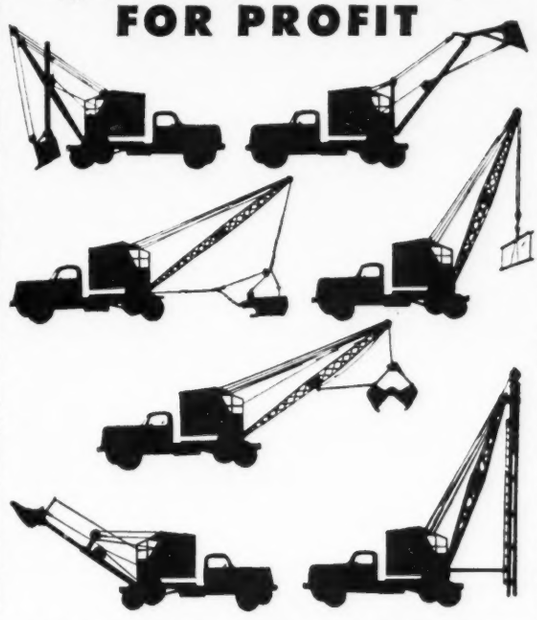
THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

"QUICK-WAY" TRUCK SHOVELS



"QUICK-WAYS" FOR PROFIT



One of the easiest ways to increase profits is to cut costs . . . and *"QUICK-WAYS"* offer you not one but *seven* ways to do it.

- **CONVERTIBILITY**: Any *"QUICK-WAY"* is convertible *in minutes* from shovel to dragline, clamshell, crane, trench-hoe, pile driver or speed loader.
- **PORTABILITY**: Travels on or off the road at truck speed . . . More hours of productive work.
- **FAST OPERATION**: Fast hoist and swing action mean more material moved per man hour.
- **INTERCHANGEABILITY**: Many parts interchangeable . . . easy adjustment and repair.
- **COST**: Low initial investment, low maintenance.

All these advantages of this ruggedly built equipment add up to greater profits anywhere you put a *"QUICK-WAY"* on a job. There's a *"QUICK-WAY"* owner near you: ask HIM.

Model E: 4/10 cu. yd. cap. for mounting on any standard 5-ton truck.

Model J: 1/4 cu. yd. cap. for mounting on any standard 1½-ton truck.

Service available from Distributors strategically located in U.S. and worldwide

For speed, portability, economy of operation, and adaptability to a wider range of jobs, nothing of comparable size equals a "Quick-Way" Truck Shovel.

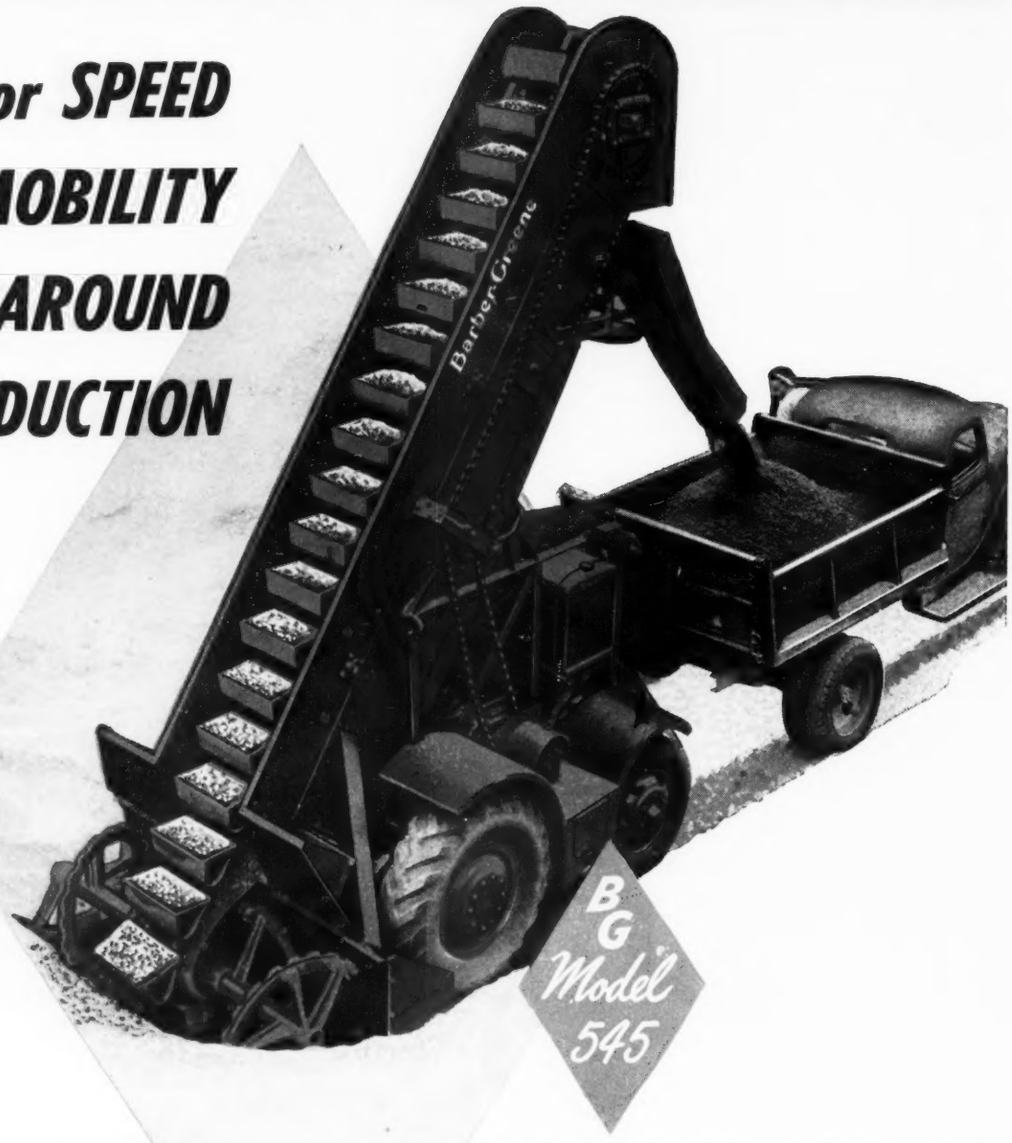
"QUICK-WAY" TRUCK SHOVEL CO.

DENVER, COLORADO

First to build power shovels for truck mounting; still the leader after 28 years

Barber-Greene

for SPEED
MOBILITY
ALL-AROUND
COST REDUCTION



Wherever free-flowing bulk materials are handled, the new B-G 545 pneumatic-tired Bucket Loader is *right*. It's big and fast—loads at a high production pace. It's easy to put to work in just the right spot—turns in its own length, has the power and traction to crowd into the bank and has a high speed reverse for faster travel around the yard. Simple, centralized controls; electric starter; hard-lipped buckets; it's engineered throughout to meet up-to-the-minute demands.

The best is never easy to get. Naturally, there is a heavy demand for the 545. That's why we suggest that if you can look ahead to the time you, too, will need one—see your Barber-Greene distributor now. Barber-Greene Company, Aurora, Illinois.

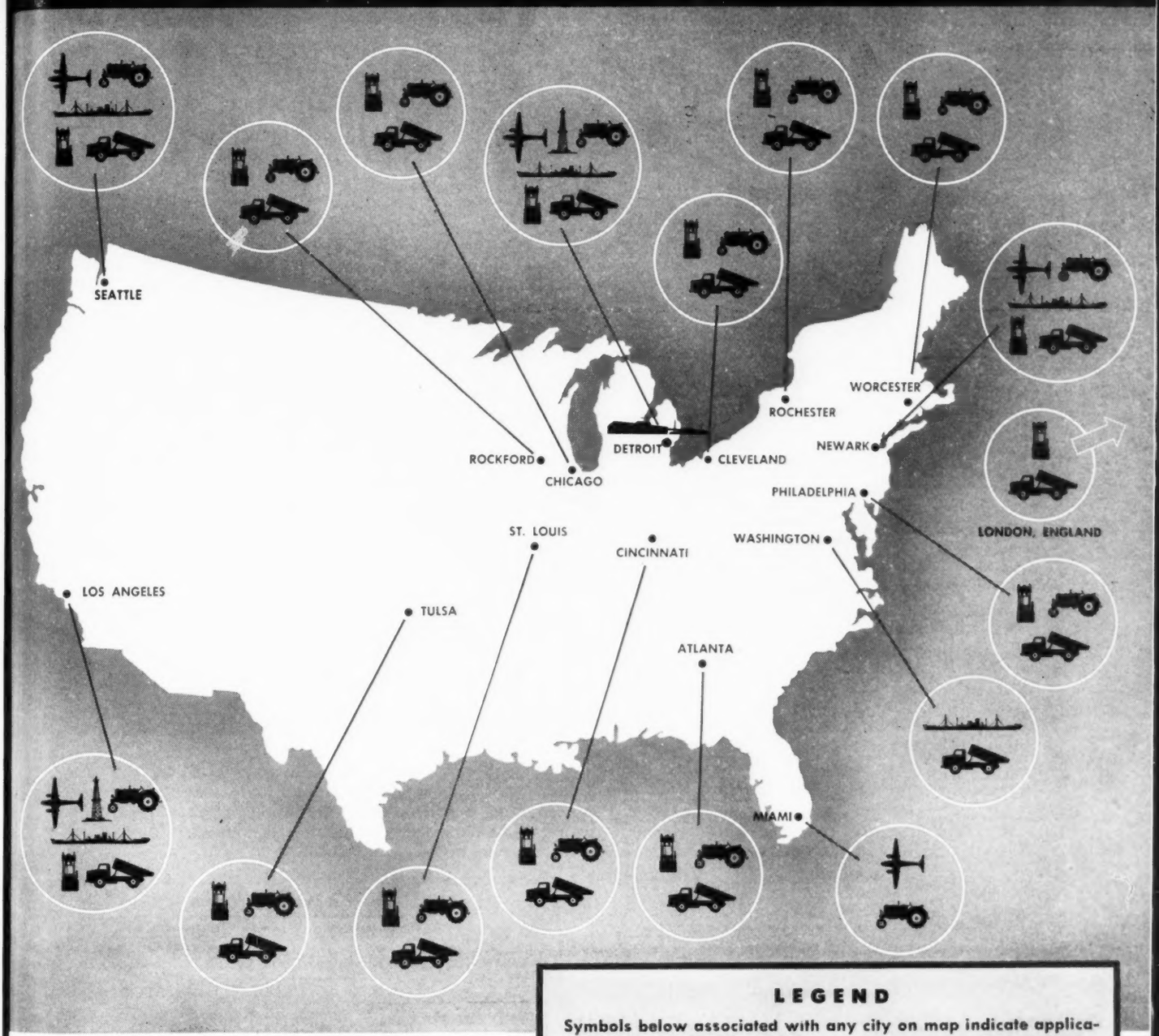
BARBER-GREENE COMPANY • AURORA, ILLINOIS

Constant Flow Equipment

LOADERS · PERMANENT CONVEYORS · PORTABLE CONVEYORS · COAL MACHINES · BITUMINOUS PLANTS · FINISHERS · DITCHERS

To BETTER SERVE Your Hydraulic Power Transmission and Control Requirements

...these VICKERS Engineering and Service Offices



These branch offices are staffed by men trained at our factory and qualified to give engineering assistance for the efficient application and correct operation of hydraulic power and control equipment. You will find it advantageous to refer your hydraulic problems to the office in your locality.

VICKERS Incorporated
DIVISION OF THE SPERRY CORPORATION
Executive Offices: 1494 OAKMAN BLVD.
DETROIT 32, MICHIGAN

3193

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

LEGEND

Symbols below associated with any city on map indicate application engineering and service available at that office.

- INDUSTRIAL MACHINERY
- AUTOMOTIVE
- OIL WELL EQUIPMENT
- FARM MACHINERY
- AIRCRAFT
- MARINE

GULF QUALITY FUELS

selected to power all equipment on tough dam job

Daniel O'Connell's Sons, Inc., Holyoke, Mass., have the contract for construction of the Upper Sackett Brook Dam at Hinsdale, Mass. This dam will insure a more adequate water supply for the city of Pittsfield, Mass. Scheduled for completion in 250 calendar days, the contract involves cutting off heavy woods and moving 85,000 yds. of earth before actual construction of the dam begins.

LIKE MANY OTHER LEADING CONTRACTORS with tough jobs on a rigid schedule, Daniel O'Connell's Sons, Inc. selected Gulf quality fuels to power all its engines—both gasoline and Diesel—on this dam project. Result: top performance from every unit.

Gulf gasolines and Diesel fuel are clean burning, have exceptionally low carbon content, and provide more efficient power. That's why these quality fuels are preferred in 30 states from Maine to New Mexico.

Make sure your equipment gets the benefits of Gulf quality products on your next job. They are quickly available to you through 1200 conveniently located warehouses. Write, wire, or phone your nearest Gulf office today.

GULF

Gulf Oil Corporation · Gulf Refining Company

Division Sales Offices:

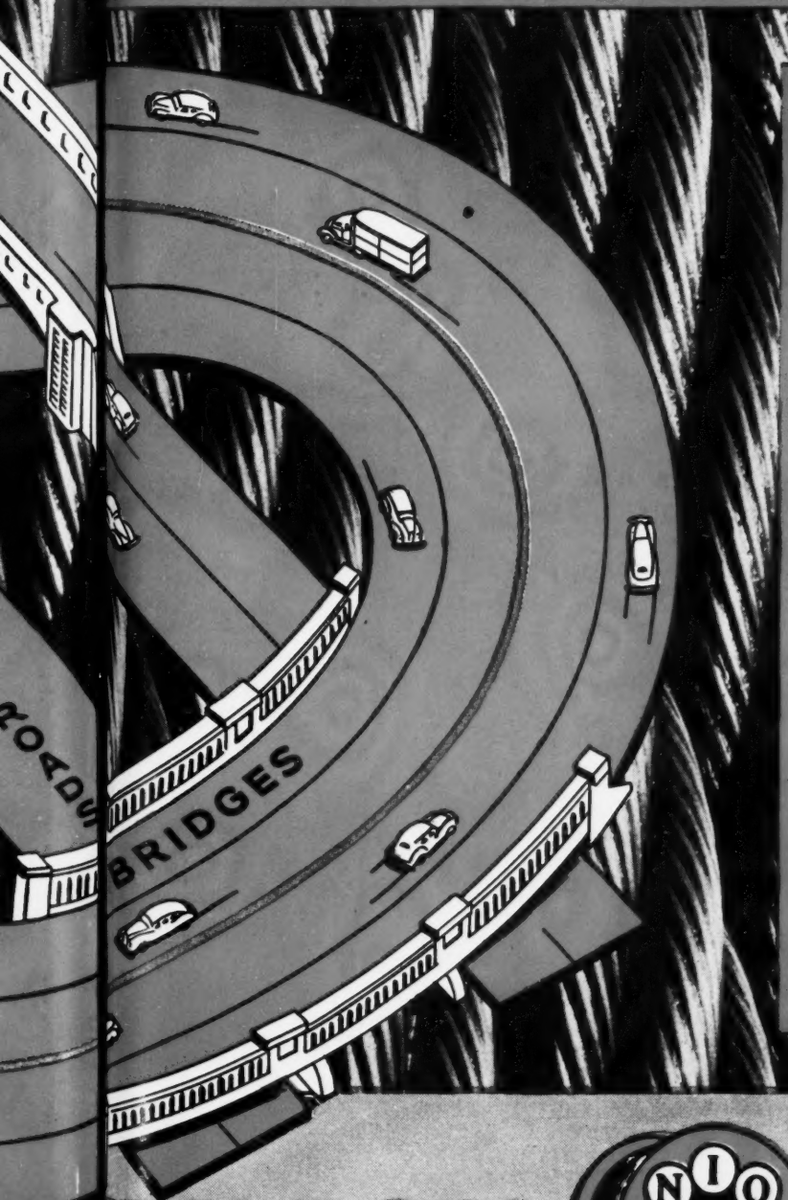
Boston · New York · Philadelphia · Pittsburgh · Atlanta
New Orleans · Houston · Louisville · Toledo

HIGHWAYS
UNDER-PASS
OVER-PASS

GOOD ROADS ARE CHEAP!

Figured on a per year instead of a per mile basis, good roads will cost nothing because they will pay off in miles, minutes and lives. Time and delay studies show that lost minutes at 1 cent per minute, per car and lost miles at 3 cents per mile, per car will more than pay the yearly cost of modern highways tailored to fit traffic flow and load. Facts from the Public Roads Administration's accurate inventory of highways and traffic indicate that—

AMERICA CANNOT AFFORD TO WAIT UNTIL THERE ARE 100 CENTS IN THE DOLLAR NOR UNTIL THERE IS UNEMPLOYMENT TO BE RELIEVED



MAKE RESERVATION NOW — VISIT WORLD'S FAIR OF CONSTRUCTION MACHINERY

The gigantic jobs of highway, airport, flood control, irrigation and soil conservation construction planned for America could not be accomplished for ten times present costs were it not for the fact that the construction equipment industry has designed, engineered and developed cost-cutting, man-hour-saving machinery far ahead of anything ever before heard of.

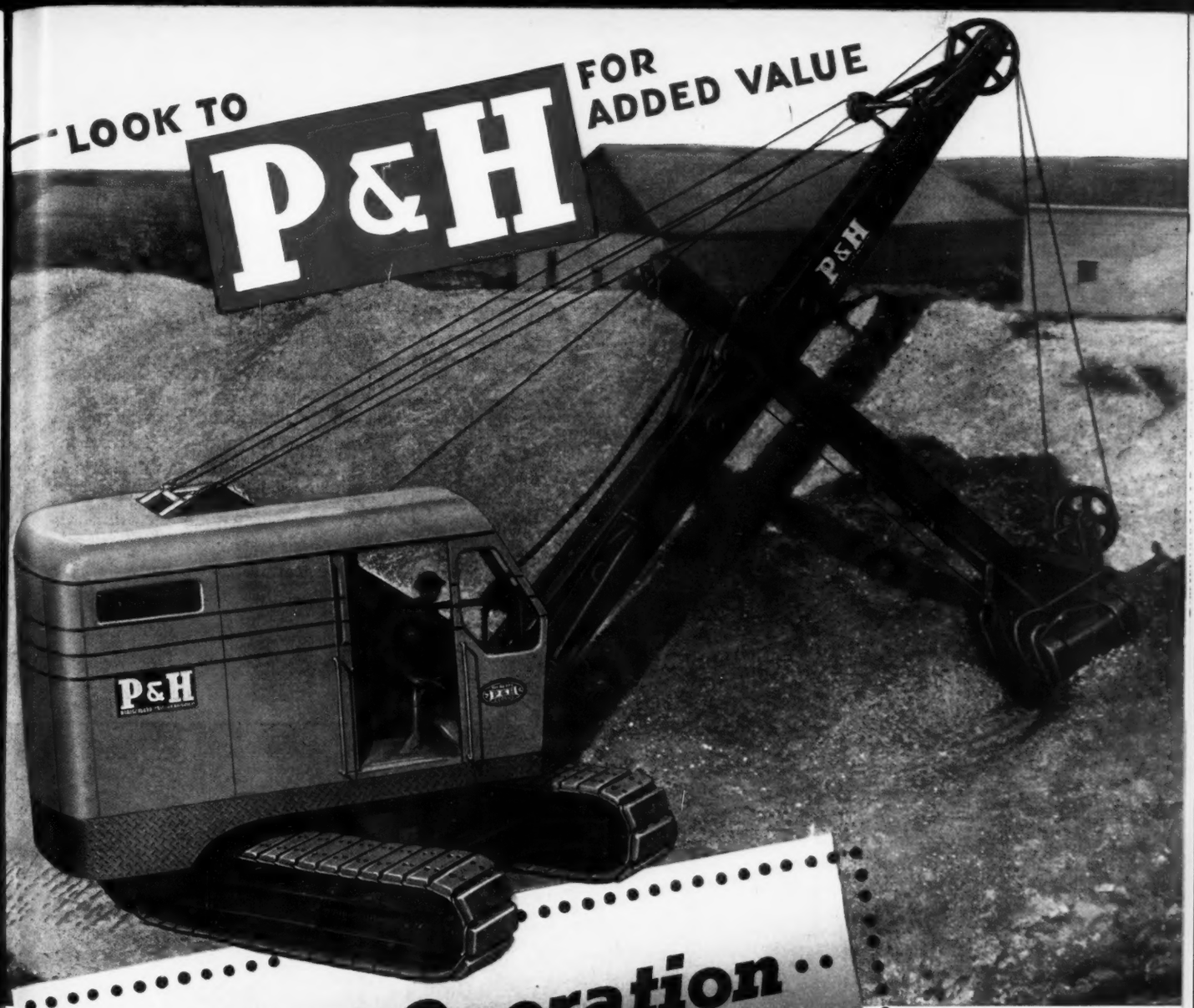
It will be there—at Soldier Field, Chicago, July 16-24, 1948, the Road Show — World's Fair of Construction machinery. Spectacularly and colorfully displayed in an arena the size of 30 football fields, you'll see hundreds of mechanical miracles ranging from push-button-jobs up to 200 tons in weight. No construction man can afford to miss it. Everyone in the profession will find the exact cost-cutting equipment needed to handle this responsibility in the tremendous construction projects America must start and finish with greater speed than ever before.

Make your hotel reservation NOW. Write American Road Builders Association, 1319 F. Street, Washington, D. C.

UNION WIRE ROPE CORPORATION
2174 Manchester Ave. Kansas City 3, Mo.

union UNION WIRE ROPE CORP Wire Rope
union-formed is Preformed

LOOK TO **P&H** FOR ADDED VALUE



Smooth Operation

P&H's Hydraulic Control Is Easier On the Machine — Easier for the Operator

One of the most outstanding advancements in excavator operation, P&H's direct-acting hydraulic control, is the same low pressure principle used in the braking system of your trucks — thoroughly proved — both in simplicity and trouble-free performance.

You'll like the smooth, velvety action that cushions the mechanism against shocks — saves repair bills. You'll like the quick response on every movement that means faster digging — greater production per day. And you'll like the easy handling that reduces physical effort to a minimum.

There's a P&H working somewhere near you. Why not see it in action?

LONG LEVER CONTROLS are grouped for convenience, providing natural coordination for the operator — far less muscular effort is required. The operator feels the effect of braking pressure on the load just as you do when you operate the brakes on your car. That's why you save so much time in swinging and spotting.

P&H EXCAVATORS

4494 W. National Avenue
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION

EXCAVATORS · ELECTRIC CRANES · ARC WELDERS · P&H · HOISTS · WELDING ELECTRODES · MOTORS

ANOTHER

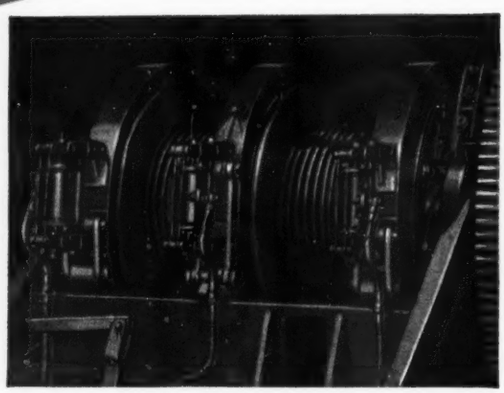
P&H

ADDED VALUE

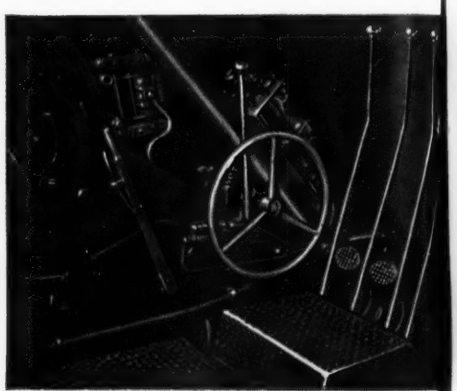
Why CONTROL IS MORE DEPENDABLE

P&H's direct-acting hydraulic control is far simpler and safer. By eliminating the multiplicity of mechanical levers, reach rods, rockers, rocker pins, etc., throughout, there are fewer things to cause trouble or go wrong.

Why RESPONSE IS QUICKER—*effort less*

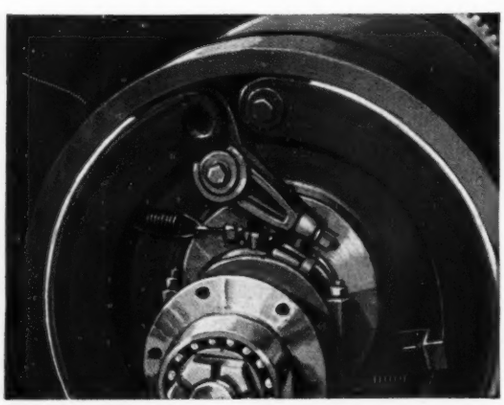


The elimination of complicated mechanical hookups also eliminates a lot of wear and the resulting waste motion at the operating levers.



With P&H's low pressure hydraulic system, motion is actuated by control levers and transmitted directly to operating part by a solid column of fluid. Operation requires less effort . . . response is quicker.

Why MAINTENANCE COSTS ARE LOWER . . .



In addition to the elimination of mechanical parts, brake and clutch bands last a lot longer. Bands are nearly full wrap on the drum . . . providing 15% to 20% more braking surface. Also, shoes are reversible. Note that they can be changed to provide still additional service.

P&H's direct-acting hydraulic control is but one of many P&H Added Values that make your investment in excavating equipment go further. Why not get the facts about all of them? See your nearest P&H representative or write us for literature.

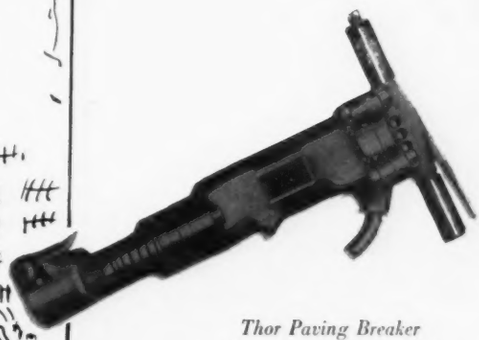
P&H EXCAVATORS

4494 W. National Avenue
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION

EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

P&H Excavators are built in all sizes up to 6 cubic yards capacity, gasoline, Diesel or electric powered. Ask for literature on the size that interests you.



Thor Paving Breaker
(Model 25—Heavy Duty)

Thor Sinker Rock Drill
(Model 75—Heavy Duty)

More Blows per Minute=MORE WORK PER SHIFT

Thor Paving Breakers and Rock Drills deliver more blows per normal shift . . . and every blow is the hardest packed by any tool of its type. Fast, hard Thor blows mean *faster, more efficient* demolition—whatever the job. Profit by Thor's "*extra wallop*" on your jobs. Call your Thor dealer for a demonstration.

INDEPENDENT PNEUMATIC TOOL CO.
600 W. Jackson Blvd., Chicago 6, Ill.
Export Division. 330 West 42nd Street, New York 18, N.Y.

Birmingham Boston Buffalo Cincinnati Cleveland Denver Detroit Houston
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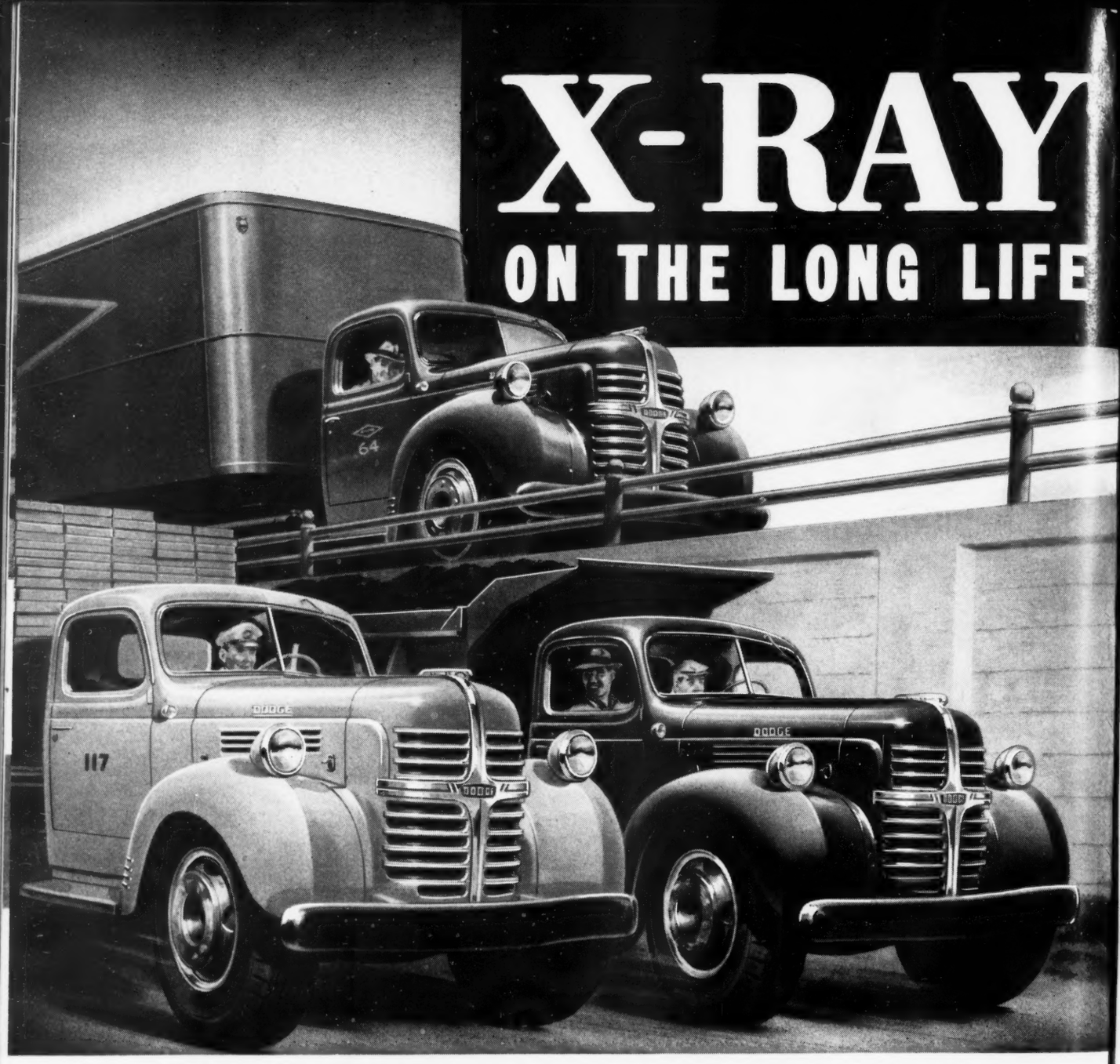
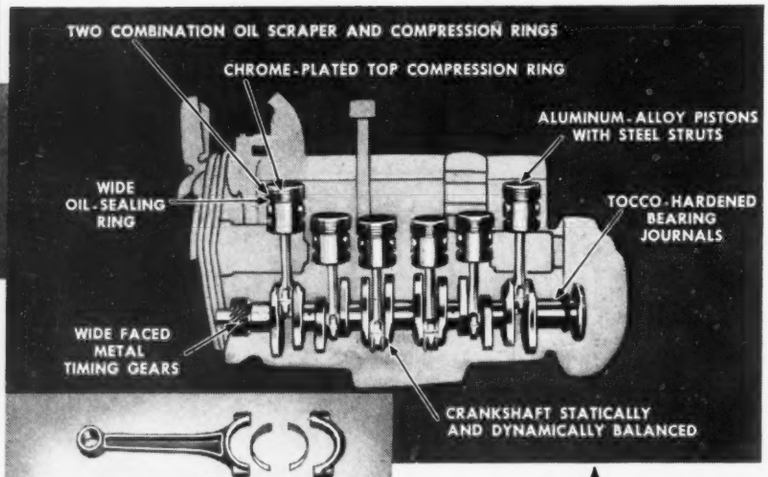
Thor PORTABLE POWER TOOLS

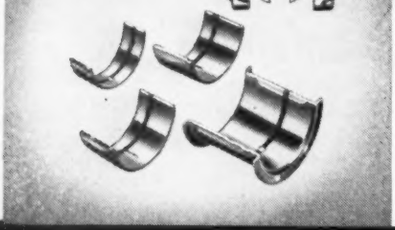
PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

X-RAY

ON THE LONG LIFE

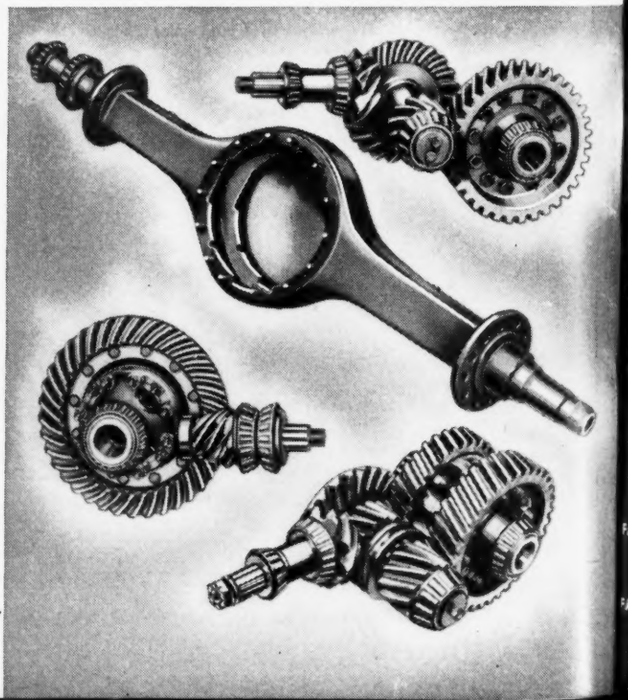






7-bearing crankshaft, with Tocco-hardened journals. Aluminum alloy pistons with four rings. Replaceable multiple-layer bearings.

Rugged, dependable rear axles—single-speed; single-speed, double-reduction, and 2-speed, double-reduction fit every hauling need.



EVIDENCE

AND ECONOMY OF

DODGE "Job-Rated" HEAVY DUTY TRUCKS

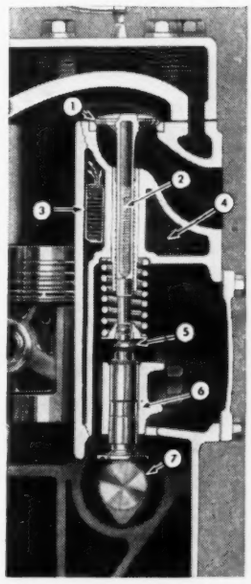
FROM radiator to rear axle, these heavy-duty trucks were especially engineered and built for *long, economical* service.

They're powered by two brilliant *truck* engines, of 282 and 331 cubic inch displacement. Horsepower-to-weight ratios reach a new high! These engines develop 225 and 270 pound-feet of torque respectively—and maintain high torque output over a wide speed range.

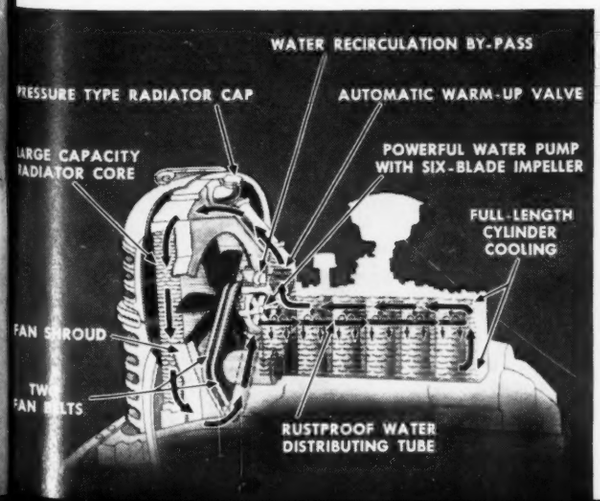
Engine cylinder walls, of chrome nickel molybdenum alloy cast iron, are *so hard* that wear is almost non-existent. Valves are made of silchrome, a special valve material of exceptional durability. For long life, exhaust valves are sodium-cooled; valves and valve seat inserts are stellite-faced.

Everywhere, unnecessary surplus weight is eliminated by improved design and advanced metallurgy. New and strictly *heavy-duty* clutches, and a remarkably efficient five-speed transmission—coupled with rear axles of entirely new design—provide a highly efficient transmission of driving torque to the wheels. Despite their husky construction and rugged strength—these trucks handle with ease, even on steep grades with capacity loads.

If *your* transportation requirements fall within the 18,500 to 23,000-pound gross vehicle weight ranges (up to 40,000 pounds G.T.W.) . . . get the complete story of these great new Dodge *"Job-Rated"* heavy-duty trucks from your Dodge dealer. We believe you'll find them your long-awaited answer to *lower-cost hauling* in their capacity ranges!

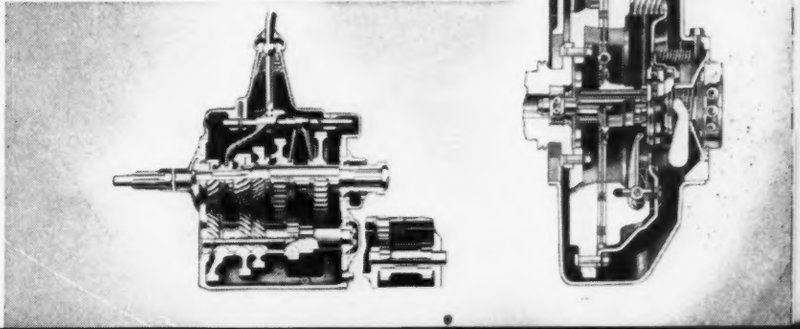


1. Stellite-faced exhaust valves and seat inserts. (All valves and valve seat inserts are of hard, durable silchrome.)
2. Sodium-cooled exhaust valves.
3. Rustproof water distributing tube for exhaust valve seat cooling.
4. Large water pockets surround valve stems for quick heat dissipation.
5. Self-locking adjusting screws facilitate tappet adjustments.
6. Tappets lubricated by pressure feed for long life.
7. High-test cast iron alloy camshaft supported by four large bearings.



This highly effective cooling system is an important reason for the greater economy, dependability, and longer life of these heavy-duty trucks.

Rugged 5-speed transmissions and heavy-duty clutches, with capacity well in excess of engine torque, insure long life, low-cost maintenance.



LaPLANT-CHOATE

HIGH SPEED EARTHMOVING

FOR LOWEST POSSIBLE COST PER YARD..PER JOB..PER YEAR

T-CHOATE

PRODUCT OF IOWA

MOTO-SCRAPERS

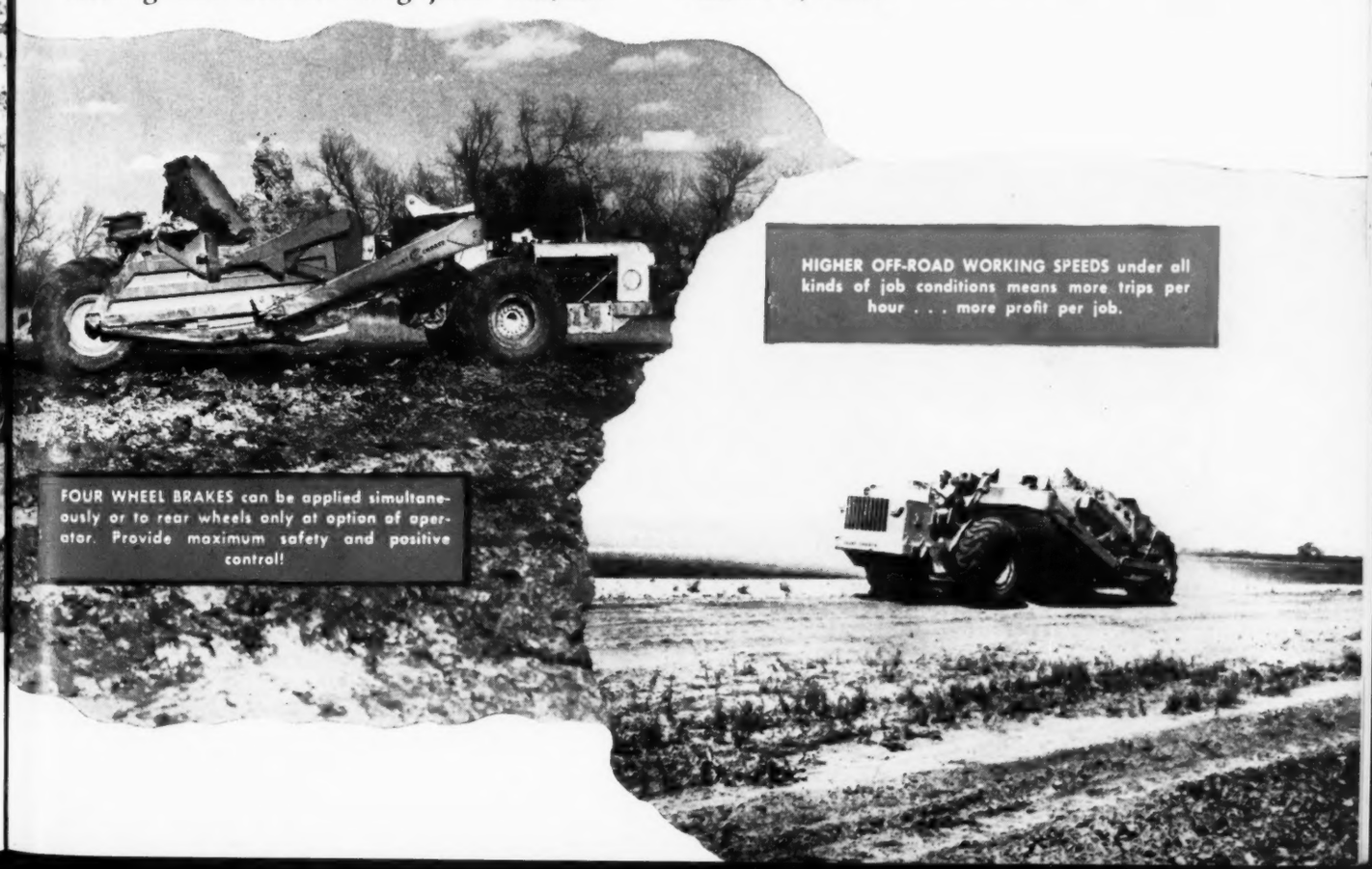
give you all the features that pay off in extra profits!

Check these features and see why owners and operators . . . in every section of the country . . . in ever increasing numbers . . . are turning to the new LaPlant-Choate MOTO-SCRAPERS.

Tested for more than two years before it was announced, this new high-speed earthmover has every feature necessary for moving more material at a minimum of cost. The big 225 h.p. engine has ample power to handle 17 to 18 yard heaped loads in high gear to save valuable minutes on every trip. Finger-tip hydraulic steering thru double-acting jacks eliminates jackknifing and provides maximum maneuverability and stability in rutted and heavy going. 60 h.p. gas starting engine assures quick starting in any weather.

These and dozens of other features make the MOTO-SCRAPER the most modern earthmoving unit on the market today.

See your nearest LPC dealer for complete details and delivery dates. Ask for booklet number 1154. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa; 1022 77th Ave., Oakland 3, Calif.

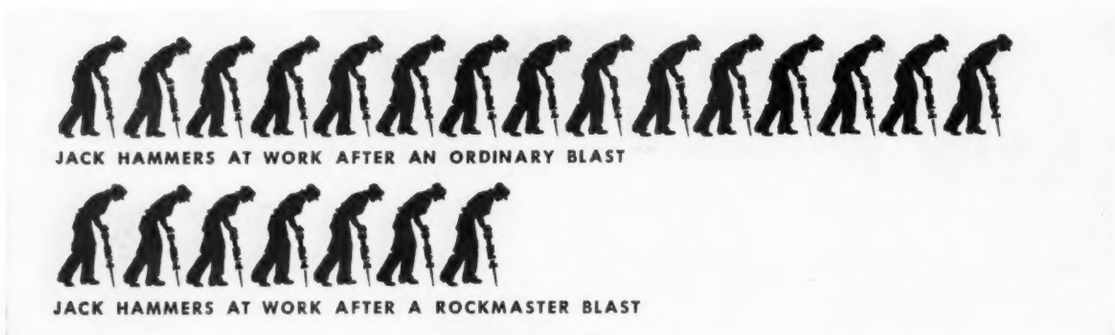


HIGHER OFF-ROAD WORKING SPEEDS under all kinds of job conditions means more trips per hour . . . more profit per job.

FOUR WHEEL BRAKES can be applied simultaneously or to rear wheels only at option of operator. Provide maximum safety and positive control!

ROCKMASTER BLASTING SYSTEM

Reduces Secondary Drilling Raises Daily Production



JACK HAMMERS AT WORK AFTER AN ORDINARY BLAST

JACK HAMMERS AT WORK AFTER A ROCKMASTER BLAST

A quarry operator reports that Rockmaster accomplished the following results:

1. Reduced number of jack hammers working on secondary drilling from 15 to only 7, because of better fragmentation from Rockmaster. Reduced secondary drilling costs more than 50%.
2. Reduced primary drilling costs 60% because Rockmaster system allowed greater spacing between holes.
3. Raised daily production over 20%.

You owe it to yourself to find out what Rockmaster can do for *your* blasting job. It may do as much or more than this if you're having trouble with noise and vibration. Chances are that Rockmaster can eliminate complaints for you as it has for hundreds of others.

Rockmaster is the original milli-second delay blasting system, developed exclusively by Atlas. Call in your Atlas representative now.

"ROCKMASTER"—Trade Mark

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

The LINK-BELT SPEEDER UC-55

"Has all the Answers!"—

WHAT do you want to do with it? The Link-Belt Speeder UC-55 serves equally well as shovel-crane, clamshell, pile driver or trench-hoe.

WHERE--? Anywhere, on roads or off roads. The big double-tired wheel-mounted UC-55 is not stopped by ground conditions.

WHEN--? It's ready to go on short notice, and doesn't take long to get there.

AND HOW! Watch it travel, watch it operate and you'll see why contractors, highway departments and municipalities use and praise the UC-55 for its efficient performance.

Let your nearby distributor show you the Link-Belt Speeder line and help you select the correct type and size for your purposes from the twenty-five models, 3/8 to 3 yard capacity.

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of SHOVELS-CRANES-DRAGLINES

TRENCHLINERS*

*Reg. Trademark

MILE-A-DAY TRENCHING PLUS BETTER TRENCH-BOTTOM GRADE CONTROL. Parsons new 200 Wheel Trenchliner, designed especially for pipeline work, farm and railway drainage, can step along at a mile-a-day pace, digging a 5'-6" trench 15" to 26" wide. Fine grading of trench bottom, important in pipeline and drainage work, is greatly simplified by the more flexible "Double Pivot" mounting of the husky wheel.

KWIK-MIX Bituminous MIXERS

End Discharge Speeds Patch Work

Patching is easier with Kwik-Mix non-tilting end discharge bituminous mixer. You need no wheelbarrow, because you pour mix direct from the mixer to the grade. Available in 10 and 14 cubic foot sizes. Kwik-Mix also builds a complete line of high quality cement, plaster and mortar mixers.

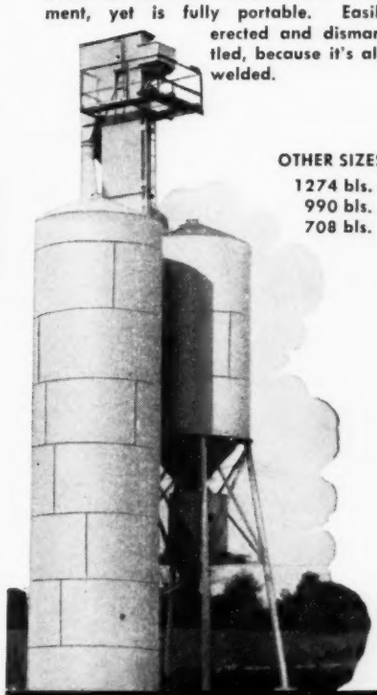
KWIK-MIX COMPANY
Port Washington, Wisconsin

JOHNSON Twin Silo BULK CEMENT PLANT

1550 Barrels Capacity, Yet It's Portable

Johnson Twin Silo bulk cement plant, stores as much as 1550 barrels of cement, yet is fully portable. Easily erected and dismantled, because it's all-welded.

OTHER SIZES:
1274 bls.
990 bls.
708 bls.



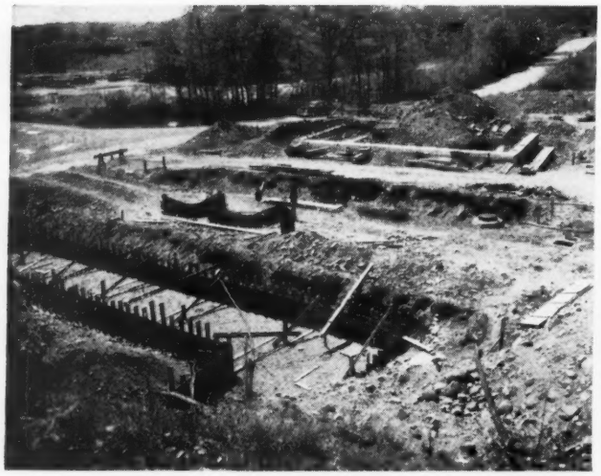
C. S. JOHNSON COMPANY
CHAMPAIGN, ILLINOIS

KOEHRING for PULL SHOVELS

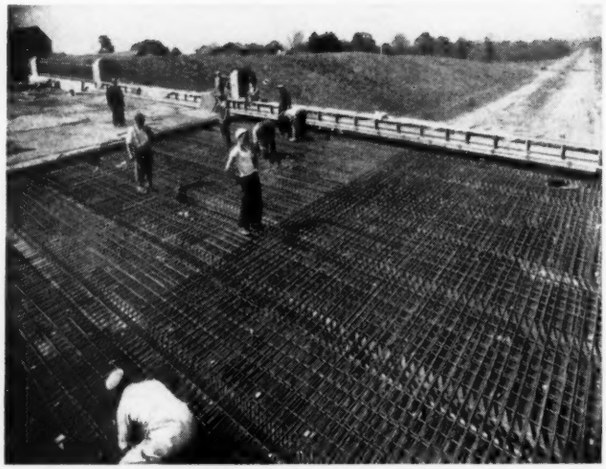
Wide Trenches Need No Shoring

When soil conditions call for wide trenches, when rocks and boulders make use of trencher impractical, check on Koehring Pull Shovels. Available in ½ yard, ¾ yard and 1½ yard sizes. Fully convertible to shovel, crane or dragline when trenching job is done. Heavy-Duty.

KOEHRING COMPANY
MILWAUKEE 10, WISCONSIN



Skiff St. Bridge, Hamden, will have two spans of 45 ft, 3 in. Old road (top, right) is to be relocated to cross parkway. Contractor: D. V. Frione & Company, Inc., New Haven, Conn.



Bethlehem Reinforcing Bars in construction of Hall Avenue Bridge, Wallingford. Bridge has two spans of 49 ft, 3 in., and crosses parkway. Contractor: D. Arrigoni, Middletown, Conn.

Bridge construction along Parkway in Connecticut

Named for a former governor, the Wilbur Cross Parkway is to be a vital link in Connecticut's chain of express highways which will ultimately cross the state from a point near Mashapaug, at the Massachusetts-Connecticut line, to New Haven, then turn southwestward to New York's Westchester County.

Some thirty miles in length, the new parkway is already carrying traffic over its western and northern extremities, and is now rapidly taking shape between New Haven and Meriden. In line with Connecticut's policy of grade-crossing elimination, its construction includes the erection of numerous bridges, some of which are shown here. Reinforcing steel for these bridge structures was furnished by Bethlehem.

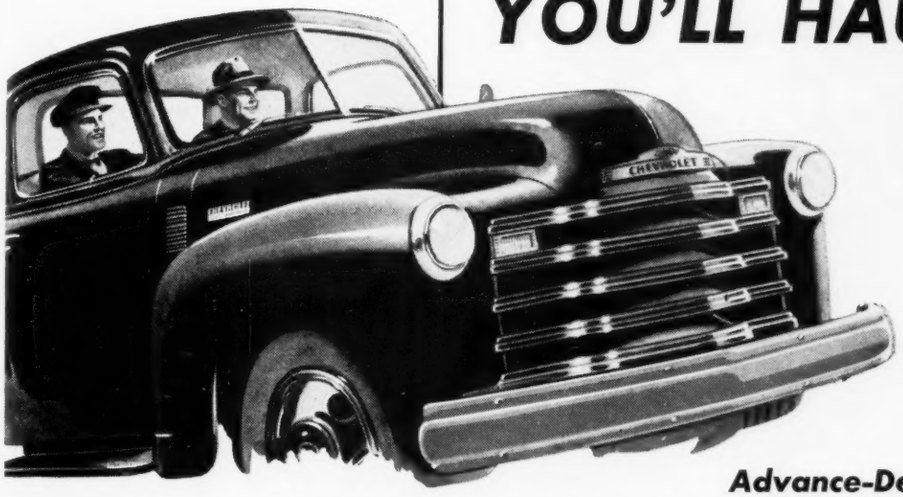
Baldwin Avenue Bridge, Meriden. Two spans of 48 ft. Here parkway is already in use, but island is yet to be landscaped. Contractor: Arute Brothers, Inc., New Britain, Conn.

Railroad bridge at Wallingford has span of 72 ft, carries parkway over tracks of New York, New Haven and Hartford R. R. Contractor: M. A. Gammino Construction Co., Providence, R. I.

Showing Bethlehem Reinforcing Bars in 106-ft-span Dixwell Ave. Bridge, Hamden. Parkway to cross existing roadway here. Contractor: The Mariani Construction Co., New Haven, Conn.

On the high road or low road . . .

YOU'LL HAUL WITH POWER!



CHEVROLET

Advance-Design

CHEVROLET TRUCKS

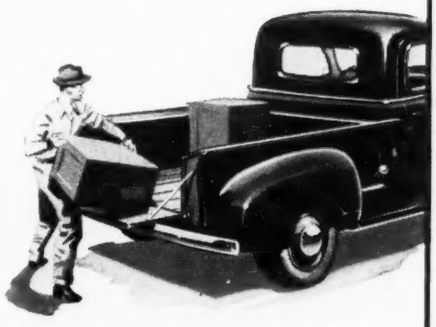
Here's "more power to you" on your hauling job—extra power to make "molehills" out of mountains and shorten the long level stretches. It's the famous Valve-in-Head Load-Master Engine in the new Chevrolet Advance-Design trucks. See these trucks of tomorrow—today! They're "loaded" with new features and innovations!

**Fresh-air heating and ventilating system optional at extra cost.*

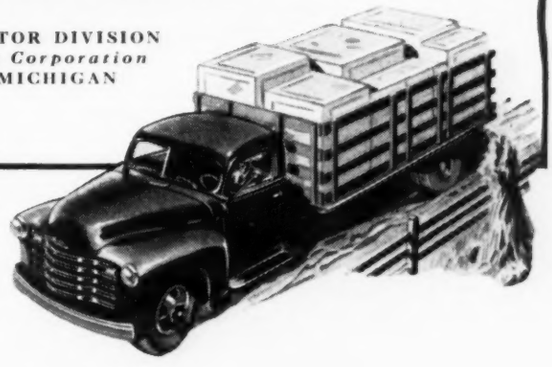
CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!

CHEVROLET MOTOR DIVISION
General Motors Corporation
DETROIT 2, MICHIGAN

THE CAB THAT "BREATHES" . . . fresh air is drawn in from the outside—heated in cold weather—and used air is forced out!*



Panels and pick-ups have **INCREASED LOAD SPACE**—stake and high rack bodies **MORE EFFICIENT LOADING**.... New, stronger, sturdier **FRAMES** are designed to carry greater loads greater distances for a longer time!



LONGER WHEELBASES give better load distribution. . . . Chevrolet's famous **FULL-FLOATING HYPOID REAR AXLES** are geared for the load!

The cab is **FLEXI-MOUNTED**—cushioned on rubber against road shocks, torsion and vibration! . . . **DRIVER'S COMPARTMENT** is wider, with more leg room. The seats are fully adjustable, bigger and more comfortable. Wider, deeper **WINDSHIELD** and **WINDOWS** increase visibility by 22%!

Chevrolet **VALVE-IN-HEAD TRUCK ENGINES** are world's most economical for their size. . . . There are **HYDRAULIC TRUCK BRAKES,** *exclusively* designed for greater brake-lining contact—for positive action!

...Bucket selection made EASY!

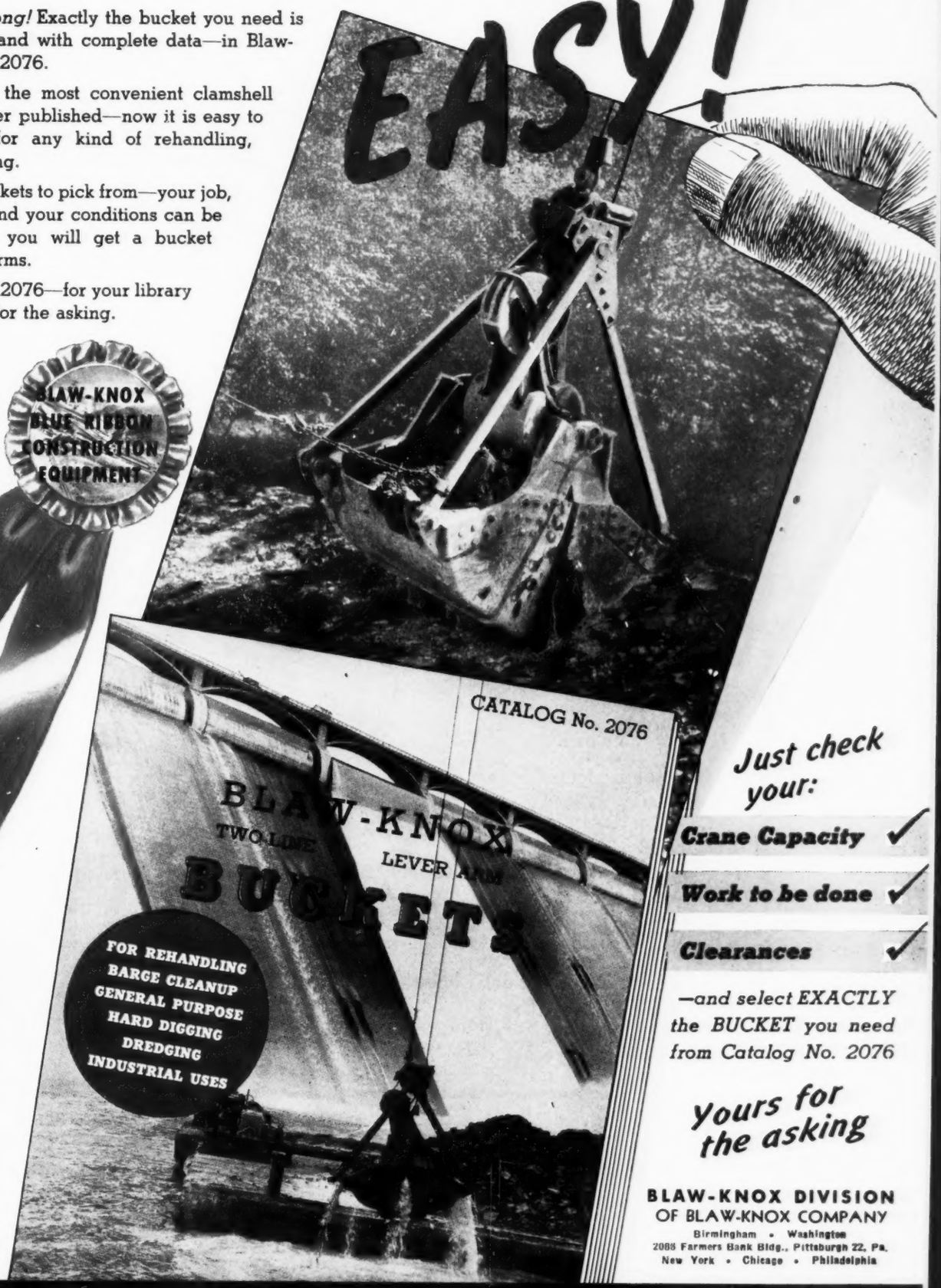
You can't go wrong! Exactly the bucket you need is shown in picture and with complete data—in Blaw-Knox Catalog No: 2076.

Here you have the most convenient clamshell bucket catalog ever published—now it is easy to select a bucket for any kind of rehandling, digging or dredging.

Hundreds of buckets to pick from—your job, your equipment, and your conditions can be exactly met—and you will get a bucket which really performs.

Get Catalog No. 2076—for your library or files—its yours for the asking.

BLAW-KNOX BLUE RIBBON CONSTRUCTION EQUIPMENT



Just check your:

Crane Capacity ✓

Work to be done ✓

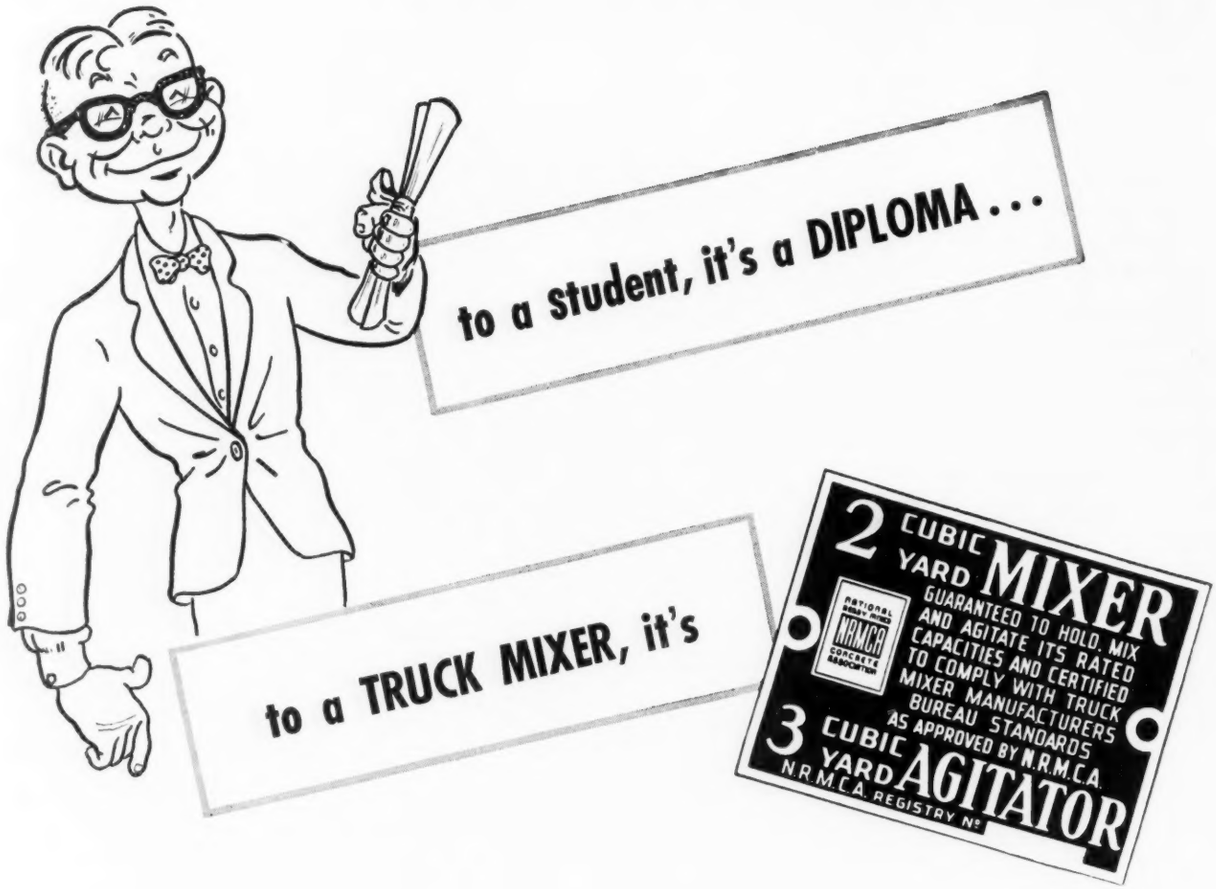
Clearances ✓

—and select EXACTLY the BUCKET you need from Catalog No. 2076

yours for the asking

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
Birmingham • Washington
2088 Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia

BLAW-KNOX CONSTRUCTION EQUIPMENT



One of life's greatest moments to the school boy is the presentation of a diploma. It's his certificate of success . . . his mark of achievement.

To a truck mixer, the rating plate of the Truck Mixer Bureau represents something very similar. It is equally representative of achievement . . . of a successful passing of the standards set up by the Bureau for your protection. The rating plate is your guarantee of full rated capacity. You don't guess . . . you know the exact capacity of the mixer.

Truck Mixer Manufacturers Bureau

Affiliated with the National Ready Mixed Concrete Association

BLAW-KNOX DIVISION
Pittsburgh, Pa.

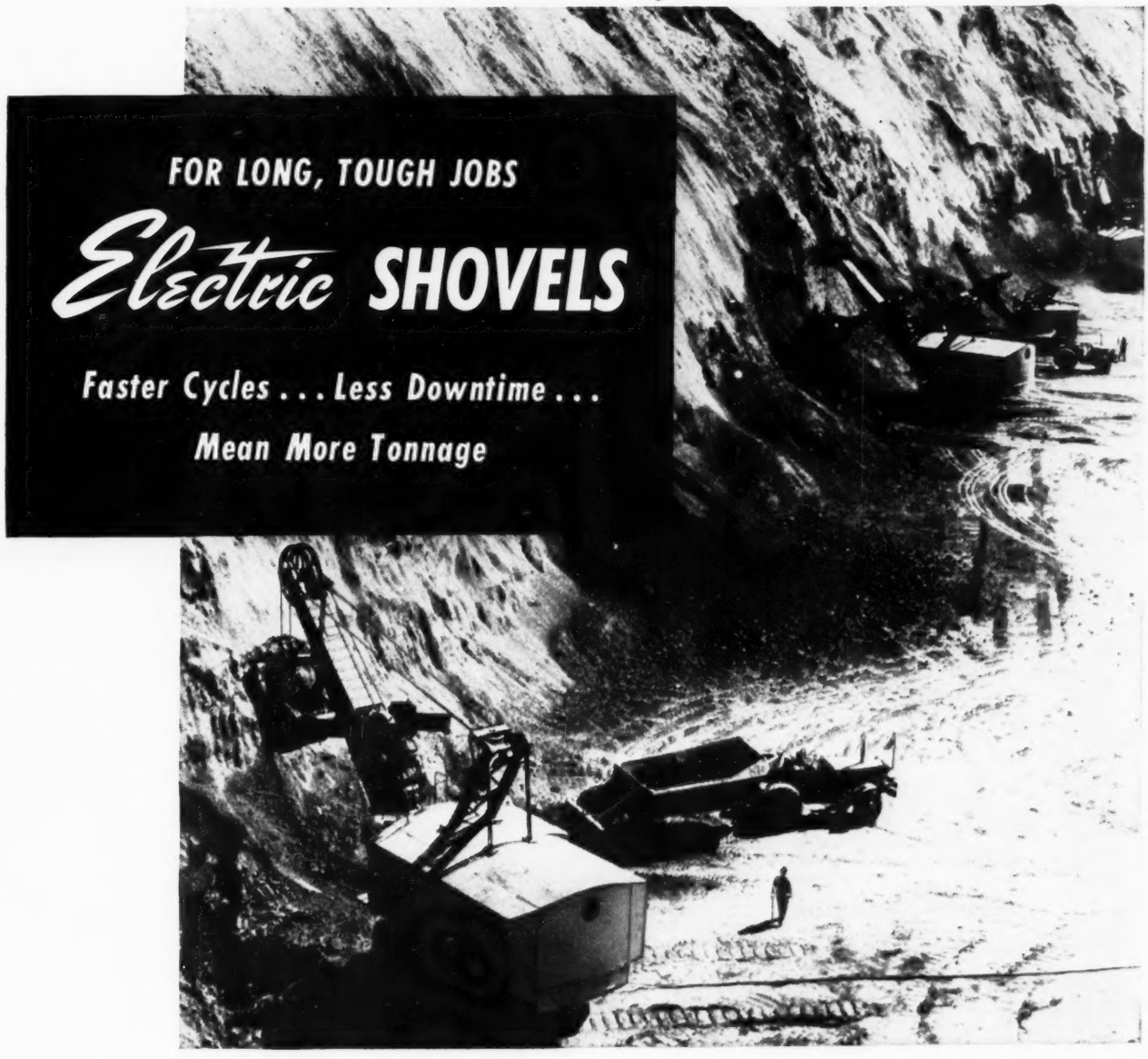
CHAIN BELT COMPANY
Milwaukee, Wis.

CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.

THE JAEGER MACHINE COMPANY
Columbus, Ohio

RANSOME MACHINERY COMPANY
Dunellen, N. J.

THE T. L. SMITH COMPANY
Milwaukee, Wis.



EVERY contractor has his own way of tackling a big job . . . this ingenuity and resourcefulness keeps him in business. But they all agree on one point: electrically powered shovels and draglines can out-dig other excavators on long, tough jobs. Power shovels produce more because they are fast and flexible, accelerate and decelerate rapidly, move at high speed with light loads. The operator's productivity is high too, because he has instantaneous finger-tip control of all shovel motions . . . no big levers to manage.

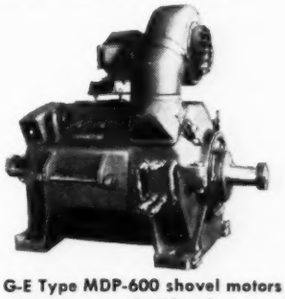
Maintenance on electric equipment for power shovels is negligible; a six-months check-up and occasional brush replacement is all the attention it needs. The motors and control are built to take rough treatment and operate satisfactorily in dusty atmosphere.

The power shovel is just one of many electrified construction tools which are helping contractors produce more for less . . . faster. Whether you buy or build contractors' equipment, ask your G-E representative to show you the inherent advantages of electric drive. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

GENERAL ELECTRIC

655-63

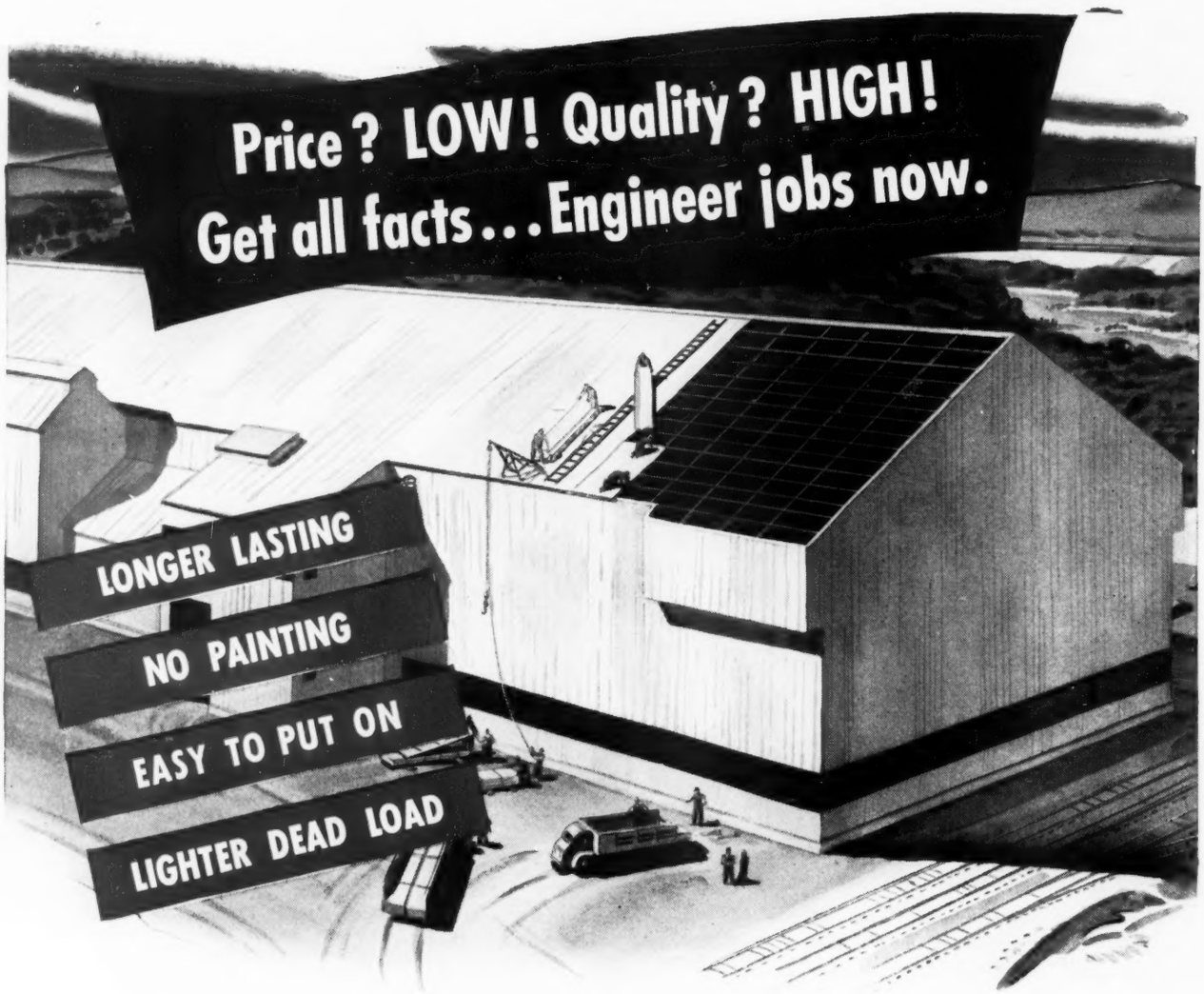
These giant shovels, digging fill for the San Francisco airport, are powered by General Electric motors and control.



G-E Type MDP-600 shovel motors are favorites with excavator builders because they are mechanically strong, require minimum maintenance.

ELECTRIFIED CONSTRUCTION
BETTER PRODUCT ★ LOWER COST

Alcoa Aluminum INDUSTRIAL



Aluminum has long been used, and proved ideal, for roofing. Alcoa Industrial Roofing and Siding is lower in price than any building material of comparable quality. And it comes in corrugated sheets that you can put on easily and quickly.

Compare costs! See the big savings you can offer by figuring on Alcoa Aluminum Roofing and Siding for industrial jobs, savings made up of low cost per square, and faster erection.

Compare quality! Here's a material that will stand common industrial atmospheres . . . smoke and fume . . . for years and years. Can't rust or stain adjoining surfaces. A *strong* roof. Good looking, too.

The aluminum used in the sheets is a tough, sturdy Alcoa Alloy that is unexcelled in resistance to atmospheric corrosion by any aluminum alloy now made. Get the full story. Be among the first, today, to offer this material for buildings of tomorrow.

WRITE FOR PRICES

ALCOA ALUMINUM

ALCOA

ROOFING and SIDING . . .

HERE ARE THE DETAILS

Thickness: .032 inches.

Lengths: 5, 6, 7, 8, 9, 10, 11 and 12 feet.

Widths: Roofing sheet, 35 inches; Siding sheet, 33¾ inches; Coverage: 32 inches.

Corrugation: ⅞ inch deep, 2.67 inches center to center.

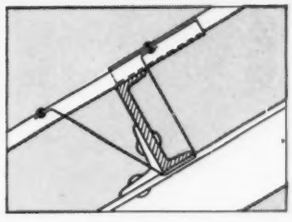
Weight: 81 lbs. per 100 sq. ft.

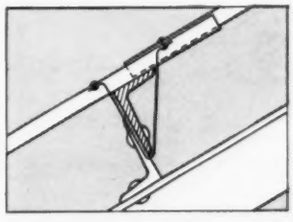
LOAD CARRYING CAPACITY

PURLIN SPACING	CLEAR SPAN	UNIFORM LOAD p. s. f. (Safety factor: 2)
6'6"	76"	29
6'0"	70"	35
5'6"	64"	41
5'0"	58"	50
4'6"	52"	63
4'0"	46"	80

QUICK APPLICATION

Illustrated here are two ways of installing Alcoa Industrial Roofing Sheet.



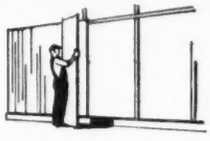


STRAP FASTENERS CAN BE ADAPTED TO PRACTICALLY ANY TYPE OR ARRANGEMENT OF PURLINS.

LOWER INSTALLATION COSTS

Because Alcoa Industrial Roofing is light in weight, it is easier to handle; can be put on in less time and with less handling equipment.

FOR SIDING THAT GOES UP FAST



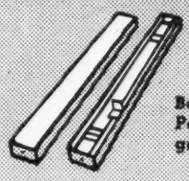
Alcoa Industrial Siding has the same corrugation dimensions and lengths as Industrial Roofing. Over-all width is 33¾ inches covering 32 inches and providing extra economy for siding applications. Properly applied and with girt spacings up to 7'9" it will withstand 20 p.s.f. wind load.

ASK FOR COMPLETE INFORMATION

Pick up your telephone now and call your local Alcoa sales office. Ask for a sample and complete information on Alcoa Industrial Roofing and Siding Sheet. Or write to ALUMINUM COMPANY OF AMERICA, 1458 Gulf Bldg., Pittsburgh 19, Pa.

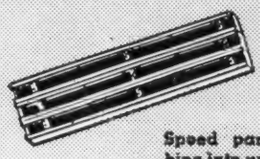
INDUSTRIAL ROOFING AND SIDING

THE A. B. C.
of ATLAS
Pre-Eminence



Basic unit, the Speed Panel, made of rugged steel.

Ingenious, quick-action, wedge bolt, for rapid joining or stripping.



Speed panels combine into units of two or more for quick handling.

Forms are quickly and easily positioned for floors.

Light and sturdy. Easy wall assembly. Rapid stripping.

Forms assembled into multi-unit panels for rapid crane handling.

They had cheap labor and plenty of wood...

But they sent ATLAS STEEL FORMS to OKINAWA

Wood was cheap and plentiful, native labor was freely available, and yet for Army construction on Okinawa they brought Atlas Speed Forms all the way from the States. The Okinawans quickly learned to assemble and strip the simple Atlas Speed Forms, a minimum of stateside labor was involved, which drastically reduced labor costs.

Whether the concrete is poured in Oklahoma or Okinawa, on the East Coast or in the Far East, Atlas Speed Forms will reduce form costs and form labor costs in half, and speed up the completion of the job. For more details, ask an Atlas engineer—fill out the coupon below.

IRVINGTON FORM & TANK CORPORATION
IRVINGTON 59 NEW YORK

Address mail inquiries to Irvington Office.

BOSTON, MASS.
294 Washington Street

DENVER 2, COLORADO
1800 West Colfax Ave.

HOUSTON, TEXAS
3815 Garrott Street

MIAMI, FLORIDA
93 N.E. 20th Street

NASHVILLE, TENN.

PHILADELPHIA, PA.
Broad St. Station Bldg.

SAN FRANCISCO, CAL.
Sixth and Hooper Sts.

TACOMA, WASH.
2412 N. 10th Street

WASHINGTON, D. C.
805 G Street

NEW YORK, N. Y.
43 Cedar Street

Please send me information on Atlas forms. I am particularly interested in forms for Walls ☐ Floors ☐ Tunnels ☐ Bridges ☐ Sewers ☐ Columns ☐

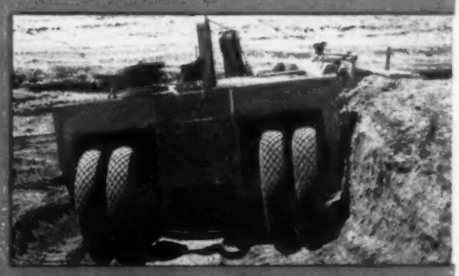
NAME .....

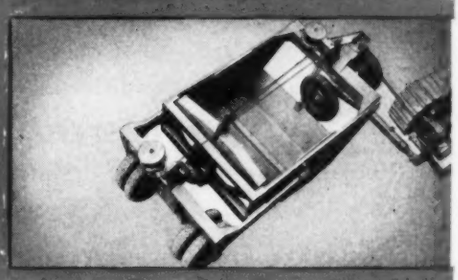
FIRM .....

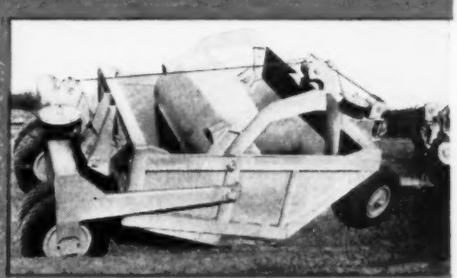
ADDRESS .....

.....

SOUTHWEST *again resumes the exclusive production of* TYPE "S" 4-WHEEL SCRAPERS







THESE SOUTHWEST 4-WHEEL SCRAPERS are unequalled for economy and efficiency in fast, low-cost dirt moving. Check these outstanding features ● FASTER, EASIER LOADING—The "rear lift" method of control permits the bowl to lay flat when digging. The earth is "rolled into" the bowl instead of being forced "uphill". ● POSITIVE, ROLLING EJECTION WITH LESS POWER—assures accurate control of spreading depth from a thin layer to a single heap. ● CUTS CLOSE TO BACKSLOPES, BUILDINGS AND RETAINING WALLS—Cutting edge extends almost the entire width of the frame, permitting close, accurate cuts. ● SHORT TURNING RADIUS AT FAST SPEEDS—Even load distribution, low center of gravity and balanced weight provide extreme stability. ● FINISHES SIDE SLOPES EASILY AND SAFELY—There is no top-heavy superstructure to overbalance this scraper. It rides the slope as smoothly as on the level.

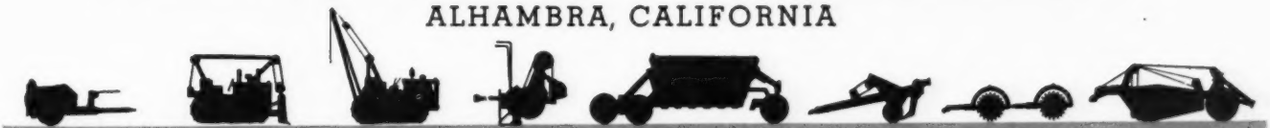
FOR DETAILED SPECIFICATIONS WRITE FOR BULLETIN CM-21

For the past eight years these scrapers have been manufactured and distributed under license from Southwest. From now on Type "S" 4-Wheel Scrapers will be manufactured and distributed under our own trade name, "SOUTHWEST". Hundreds of these scrapers are in use throughout the world—their reputation for efficient, dependable performance is well known.

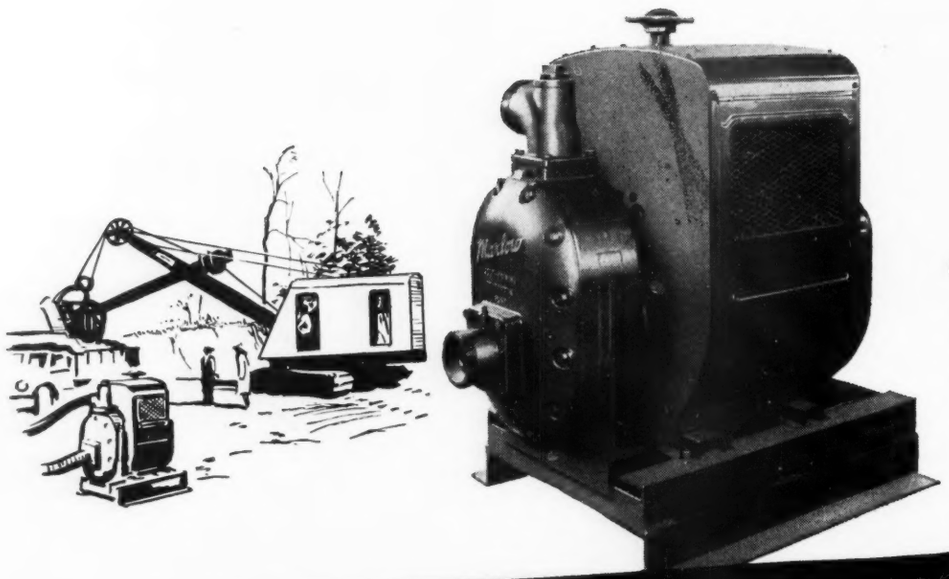
CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA



SCOOPS BULLDOZERS CRANES WINCHES DUMP WAGONS RIPPERS TAMPERS SCRAPERS



MARLOW MODEL 430

4-inch suction and discharge. Pumps 40,000 gallons per hour. Guaranteed to meet A.G.C. Standard 40M in all respects.

newest construction pump

in the world's most complete line...

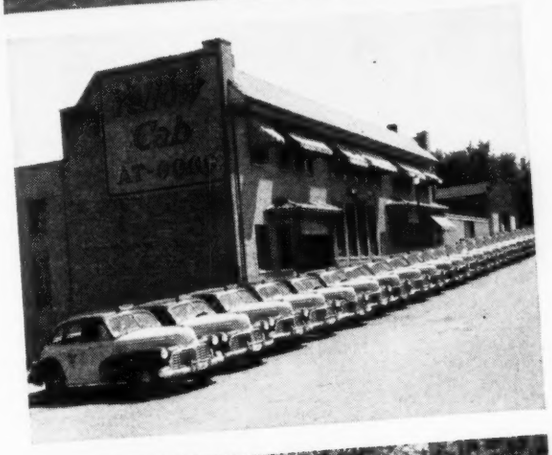
***NEW* PRIMING SPEED**—Marlow pumps have always been fast primers —this *new* Marlow primes faster than ever. Primes in 35 seconds at 15-ft. lift. Guaranteed to prime automatically on suction lifts to 25 feet.

***NEW* ENGINE**—Powered by Wisconsin 30 hp. Model VP4, big brother to the time-proved VE and VF sizes.

***NEW* STREAMLINED DESIGN** — Compact, close-coupled construction. Huskier parts, more bolts, curved cover . . . for greater strength. Streamlined inside, too . . . direct flow, no waste motion. Built-in check. Mechanical shaft seal. Mounted on wheels or skids. Write for full specifications. Marlow Pumps, 516 Greenwood Avenue, Ridgewood, New Jersey.

MARLOW PUMPS • RIDGEWOOD, NEW JERSEY

Manufacturers of Quality Pumps Since 1924



On tough jobs like these, savings multiply

with . . .

Stanolube HD

FLEET OPERATORS have put Stanolube HD in many tough spots—on heavy tonnage coal trucks in continuous operation, on large inter-city and bus fleets, on taxi operation and in door-to-door delivery service. In every type of service Stanolube HD has helped reduce engine maintenance—lengthened time between overhauls, reduced sludge, eliminated varnish and ring sticking.

Give a break to your hard-worked fleet engines . . . and to your maintenance men . . . and your pocketbook. Test Stanolube HD where you can compare its performance with that of oils previously used or with other oils now operating in your fleet. A Standard Oil Automotive Engineer will help you make a test. Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY (INDIANA) STANDARD SERVICE

A Timely Tip

THAT SAVES CONTRACTING DOLLARS

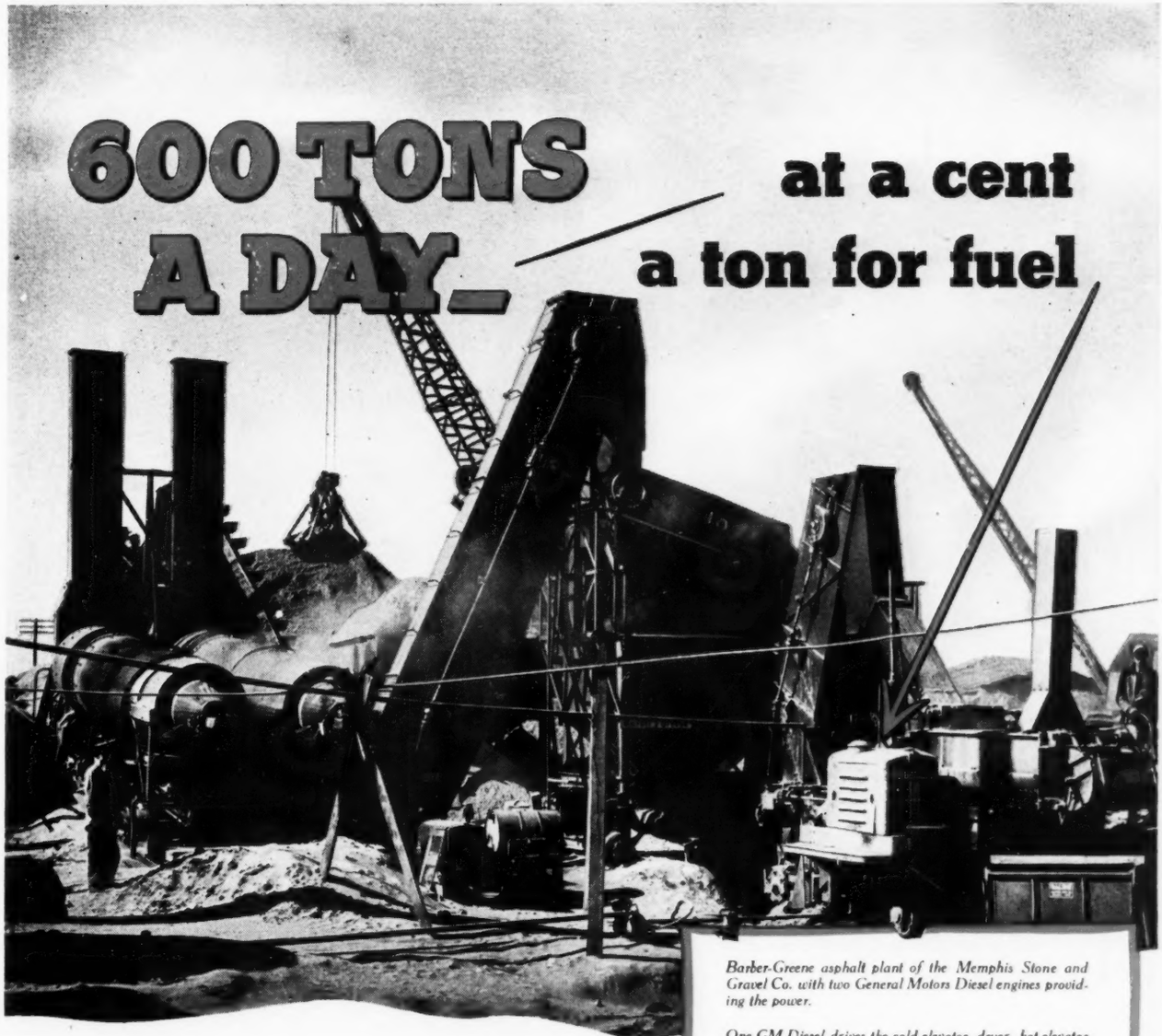
Experienced contractors have long known ARMCO Corrugated Metal Pipe as a positive aid to bigger job profits. Today the time- and labor-saving features of this durable pipe are more important than ever, and this is why . . .

Savings start the minute you begin to transport ARMCO Pipe to the job site. Although amply strong it is light in weight for easy handling, loading and hauling. Fewer trips and less labor are needed. Long lengths are securely joined by simple band couplers. On the job a small, unskilled crew installs it quickly without cradling, and backfilling can be done immediately. No curing and no delays to other operations. The entire job is speeded up and profits go up.

Let ARMCO Corrugated Pipe help you keep under the budget on that next contract. Use it for culverts, conduits, sewers, and wherever else drainage is needed. There is a type for every condition. Write for complete information. Armco Drainage & Metal Products, Inc., 1415 Curtis Street, Middletown, Ohio. Offices in principal cities.

ARMCO CORRUGATED PIPE

600 TONS A DAY— at a cent a ton for fuel



Barber-Greene asphalt plant of the Memphis Stone and Gravel Co. with two General Motors Diesel engines providing the power.

One GM Diesel drives the cold elevator, dryer, hot elevator and gradation unit. The second runs the pug mill and the elevator which keeps it supplied

Processing asphalt is a tough dirty job. It's just the kind of job that's a natural for GM Diesel power. GM Diesels can take a beating, keep steadily on the job, and all the while deliver power at exceptionally low cost. In this case on the Barber-Greene asphalt plant, at 1¢ a ton for fuel.

Being 2-cycle with power at every downstroke, GM Diesels are compact and can go to work in places where Diesels couldn't be used before. They're easy starting, need little attention, and are quick to respond to varying loads.

Construction men everywhere are astonished at the money GM Diesels save them. It's sure worth looking into. Let us know and we'll send along all the facts and details.

DETROIT DIESEL ENGINE DIVISION

DETROIT 28, MICH. ● { SINGLE ENGINES . . Up to 200 H. P. / MULTIPLE UNITS . . Up to 800 H. P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

THANKS TO THE LOCAL DISTRIBUTOR

DURING THE WAR when prompt product procurement was vital to uninterrupted and constantly increased production, distributors played a major part in finding product sources, breaking bottlenecks, unsnarling delivery tangles.

In present peacetime days, with their profit-imperilling shortages and delays, distributors continue an essential factor in the efficient flow of construction items from factory to job site.

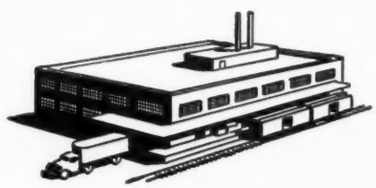
To assure speedy purchase and "on schedule" arrival of construction items distributors . . .

- develop intimate knowledge of all potential product sources . . . maintain friendly personal contact with numerous manufacturers and with other distributors
- locate and expedite delivery of hard-to-find items in small or large quantities . . . a service that includes personal calls on sources of supply by distributors' men, telephone, telegraph, and mail service
- compile catalogs packed with detailed product information helpful to buyers
- operate dependable routine and emergency delivery service between warehouse and job site
- stock hundreds of readily available items in local warehouses in anticipation of buyers' needs

Procurement services like these, plus the distributor's familiarity with construction problems which enables him to suggest substitute products and alternative methods when necessary, contribute substantially to lower construction costs. That's why economy-minded construction men the country over fill their product needs through their local distributor.

Make Distributor's Headquarters Your Service Headquarters

No. 4 in a series of advertisements sponsored by ENGINEERING NEWS-RECORD and CONSTRUCTION METHODS showing how distributor services aid economical construction



Do you know?..

Why it pays to build earth-moving equipment with U·S·S HIGH STRENGTH STEELS

1 With rolled U·S·S High Strength Steels you can increase strength and rigidity—without increasing weight.

2 You can reduce weight at low cost—without reducing ability to withstand maximum requirements of earth-moving equipment.

3 Their use insures higher resistance to shock, impact, wear and atmospheric corrosion.

4 Their formability and weldability make fast, easy fabrication possible.

5 They have behind them a record of successful application unapproached by any other steel of similar type.

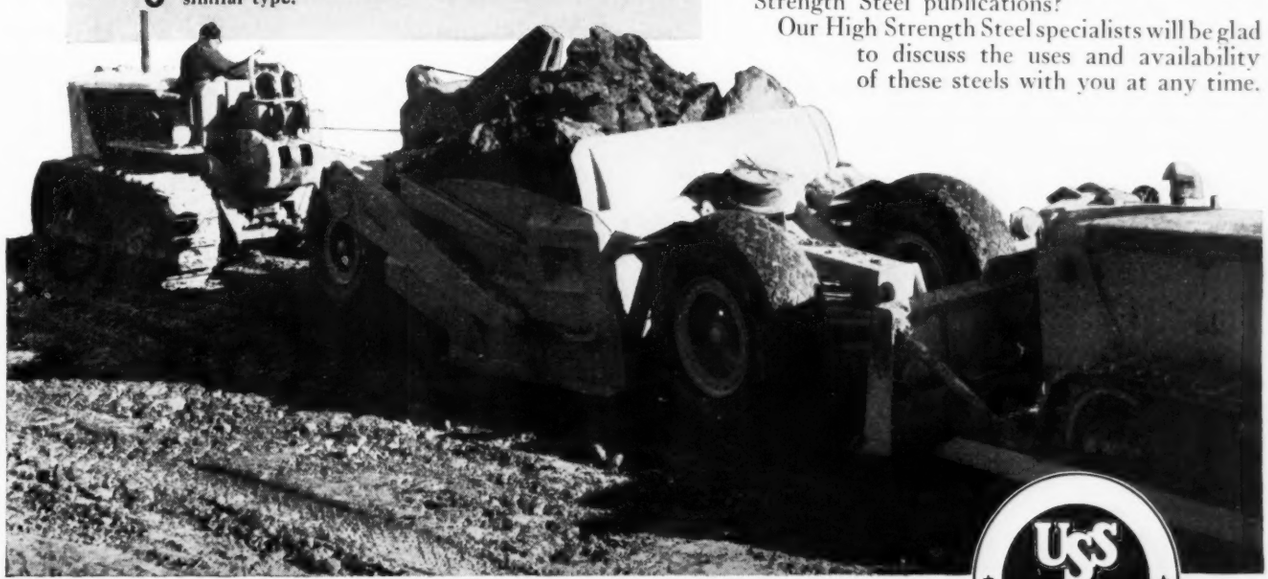
BECAUSE of these highly desirable advantages, U·S·S High Strength Steels are today being incorporated in big capacity earth-moving equipment of all kinds as well as in many accessories. Their use is synonymous with better performance and greater endurance.

Scrapers, bulldozers, trucks, trailers, excavating shovels, draglines and clamshells that are outstanding for their ability to do more, to last longer, and to operate at lower cost, owe much of their better performance and greater efficiency to the use of U·S·S High Strength Steels in all or part of their construction.

Ten years' experience has proved that these steels will give to heavy duty earth-moving equipment properties which are necessary to insure maximum dependability in operation and added service life.

To help you apply these steels most economically, we place at your disposal a wealth of practical engineering and fabrication data. Have you a copy of the COR-TEN book and other High Strength Steel publications?

Our High Strength Steel specialists will be glad to discuss the uses and availability of these steels with you at any time.

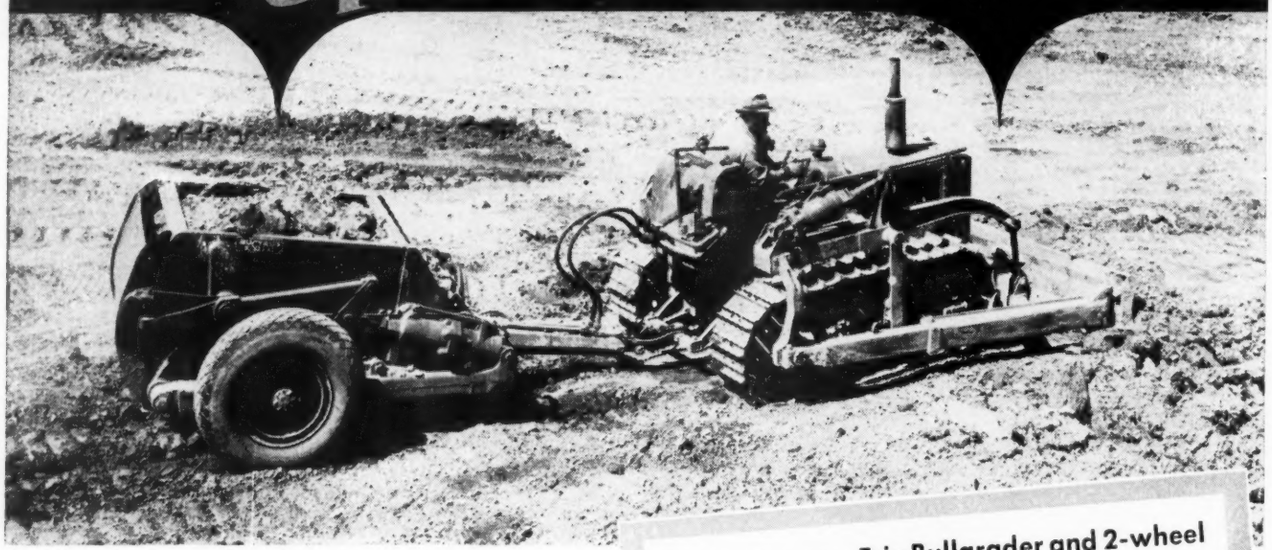


U·S·S COR-TEN · U·S·S MAN-TEN · U·S·S ABRASION-RESISTING · U·S·S MANGANESE-NICKEL-COPPER

USS HIGH STRENGTH STEEL — UNITED STATES STEEL

UNITED STATES STEEL AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY (Warehouse Distributors), Chicago · UNITED STATES STEEL EXPORT COMPANY, New York

Double Up on work capacity



With a Bucyrus-Erie Bullgrader and 2-wheel scraper combination you get both versatility and long-haul capacity — a complete dirt-moving unit operated by one man.

YOUR tractor is doubly equipped for maximum usefulness when you use the dual unit combination of a Bucyrus-Erie Bullgrader (or bulldozer) and a two-wheel scraper because you put both ends of the tractor to work. With the blade as front-end equipment, the scraper hitched to the drawbar, and both units hydraulically operated from the same pump, you have a one-man team that materially speeds up your dirt moving — loading and hauling the long-haul dirt with the scraper and moving the short-haul dirt with the Bullgrader.

By alternating the hydraulic control from one unit to the other the operator of the dual unit can: (1) dig dirt from a cut, (2) place dirt in a fill, (3) level the fill, (4) keep hauling roads in good shape, (5) backslope, (6) build shoulders, (7) cut ditches, and perform many other time-saving jobs. There's no delay, no time lost in switching from one kind of service to another. The operator simply changes his control from scraper to blade and back again, as the job requires.

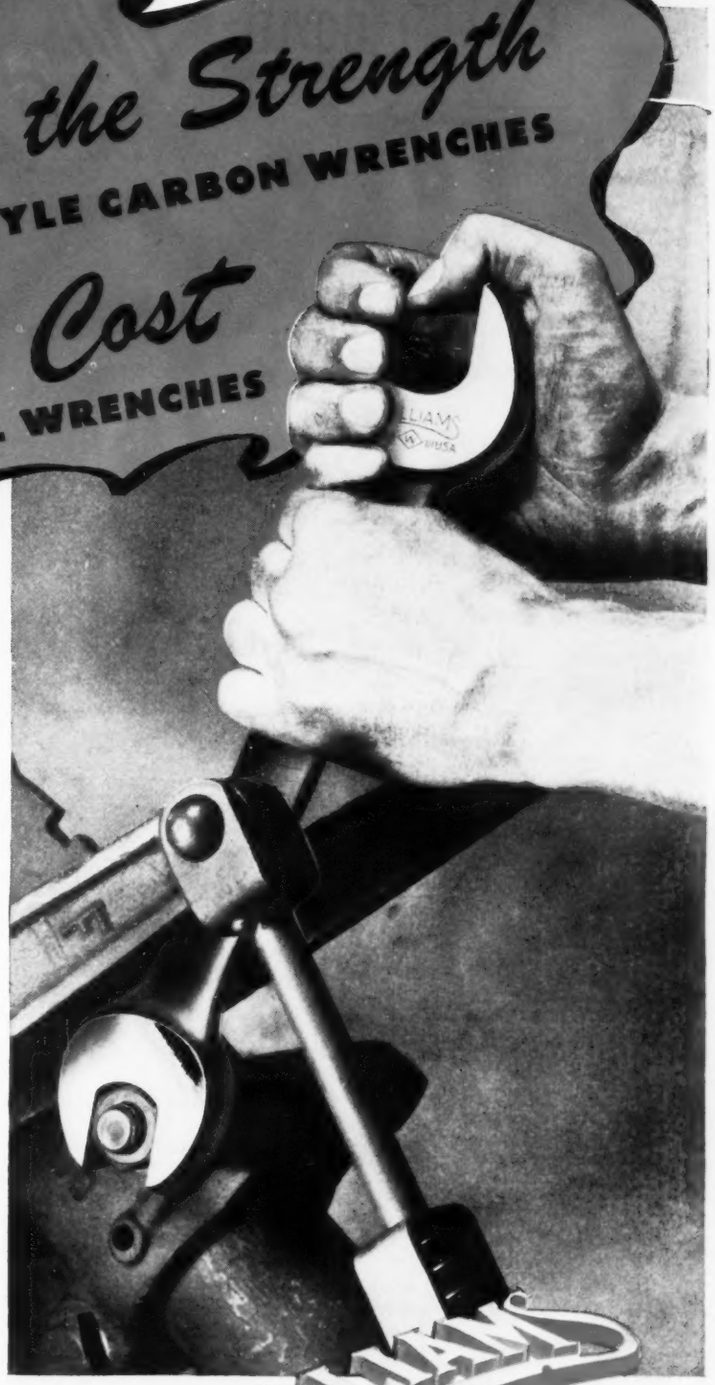
This hook-up will give your tractor the extra work capacity that quickly cuts your dirt-moving costs. Find out about the complete line of Bucyrus-Erie tractor equipment from your International Industrial Tractor Distributor. Bucyrus-Erie Co., South Milwaukee, Wisconsin.

82T47

See Your INTERNATIONAL Industrial Tractor Distributor

For BUCYRUS ERIE Balanced Tractor Equipment

Twice the Strength
OF OLD STYLE CARBON WRENCHES
Half the Cost
OF ALLOY STEEL WRENCHES



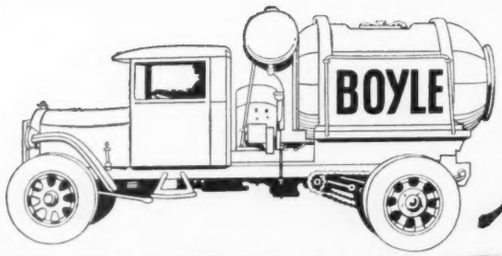
● Williams "Superior" Wrenches are drop-forged from a selected grade of carbon steel and processed to exacting specifications. They are substantially twice as strong as the earlier carbon steel wrenches of our own manufacture. Comparative tests show that these wrenches *average* 93% as strong as our corresponding alloy steel wrenches costing approximately twice as much.

Most industrial users find Williams "Superior" Wrenches their logical choice considering both strength and economy. "Superior" Wrenches are made in 50 patterns . . . more than 1,000 sizes, and are sold by Industrial Distributors everywhere.

J. H. WILLIAMS & CO., BUFFALO 7, N. Y.

WILLIAMS

DROP-FORGINGS AND DROP-FORGED TOOLS



Why is DOYLE *Selling More Concrete than* BOYLE?

Because He Knows *Beauty* Pays Dividends

HIS SMITH-MOBILE HAS ALL THESE *Features*

- Dual Water Injection System
- Cold Weather Protection for Water System
- No Water Bell or Nozzle Inside Drum
- Gravity Flow Feed Chute Charging
- No Leaky Loading Hatches
- Real Visible Mixing
- Larger Drum — Increased Capacity
- Lower Weight — Bigger Pay Loads
- High Discharge Directly into Forms
- Controlled Slow or Fast Discharge
- Perfected Drum Closing Door and Seal
- Famous Smith "End-to-End" Mixing Action
- Direct Connected Motor with 3-Point Suspension
- Improved Transmission Cushioned in Rubber
- Beauty Combined with Performance

Doyle is smart! Like many other Ready Mixed Concrete Operators he knows an investment in improved, modern equipment pays off in the long run. He also knows the value of having his name on equipment that combines beauty with performance . . . *an effective, mobile advertisement for his business.*

Check Smith-Mobile's many time-tested, profit-making features. Frankly, can you think of any other truck-mixer on the market that gives you so much for your money?

No matter how you look at it, Smith-Mobile gives you all the features you need in mixing and delivering concrete, plus BEAUTY that makes you proud to say: "She's part of our fleet."

THE T. L. SMITH COMPANY, 2851 N. 32nd Street, Milwaukee 10, Wisconsin, U.S.A.

SMITH MOBILE

The Original High Discharge Truck Mixer and Agitator

How to cut SEWAGE DISPOSAL COSTS with *Transite Sewer Pipe*

Reduced Treatment Costs

Two features of Transite* Sewer Pipe present an opportunity for important savings in the treatment of sewage:

1. Sleeve-type joints that make up tight and *stay* tight in service.

2. Long 13-foot lengths that mean fewer joints in the finished line.

This double safeguard against infiltration—*tighter* joints as well as *fewer* joints—has the practical effect of reducing the load at the disposal plant . . . often to the extent that overall treatment costs are substantially cut.

This reduction in sewage load also enables plant capacity to be conserved for future needs. And, where new treatment facilities are being planned, it permits consideration of a smaller plant . . . with possible economies in both buildings and equipment.

Transite offers other economies, too. Other important savings are possible with this pipe because it has an exceptionally smooth interior which offers minimum resistance to the flow of sewage. Its flow capacity is unusually high—n=.010. This often permits use of flatter grades and shallower trenches—with correspondingly lower excavation costs. Or, as an alternate economy, smaller diameter pipe may be used.

Low maintenance through the years. Made of asbestos and cement combined into a homogeneous material of great stability, Transite Sewer Pipe is corrosion-resistant. Tight joints safeguard against root trouble. And every Transite length is factory-tested for strength and uniformity. This adds up to low annual maintenance costs through the years.

For Further Information. If you are seeking ways to lower sewage disposal costs, send for the Transite Sewer Pipe brochure. Write Johns-Manville, Box 290, New York 16, N. Y., for your copy.

*Reg. U. S. Pat. Off.

Johns-Manville *Transite Sewer Pipe*

JOHNS-MANVILLE JM PRODUCTS

North, East, South and West—It's Schramm! Construction jobs throughout the country, in every section, rely on Schramm for their many, many compressed air needs. Here you see two jobs picked at random, the top view on the Alaskan Highway, the bottom view in Pennsylvania.

Schramm makes construction jobs easier because they furnish all the air you want, when and where you want it, economically and quickly. Just push a button and work starts. They're compact, lightweight, easy to move about on the job.

Everywhere you find a Schramm!

Schramm features: 100% watercooled to provide ideal performance winter and summer, without let-up . . . main bearings for every cylinder . . . mechanical intake valve . . . more cylinders and lighter parts . . . forced feed lubrication. Plus many more design points to provide rugged, reliable performance day in and day out.

Some users have likened Schramm to a "package" . . . a complete package which provides any amount of air, a model for every size need. Schramm has lots to offer you in its portable and stationary units, and we invite you to write us today for complete descriptive data on our complete line.

THE COMPRESSOR PEOPLE **SCHRAMM INC.** WEST CHESTER, PENNA.

Announcing CENTERFIT—the new all steel Wire Rope that cuts rope costs up to 50%!

J&L STEEL

All 17 strands in CenterFit are laid together in a single closing operation. Note all strands run in the same direction. They fit snugly into valleys between 8 inside strands and eliminate crossing of strands as in conventional design. This prevents internal nicking—gives *longer* wear. Eight outside strands, CenterFit design, give more steel, less void space, mean *greater strength*. More strands give greater flexibility, *easier handling*.

With CENTERFIT 71 contractors get:

- Double the service life on 727 machines
- 20% faster operating speeds
- 25% savings on drum and sheave repairs

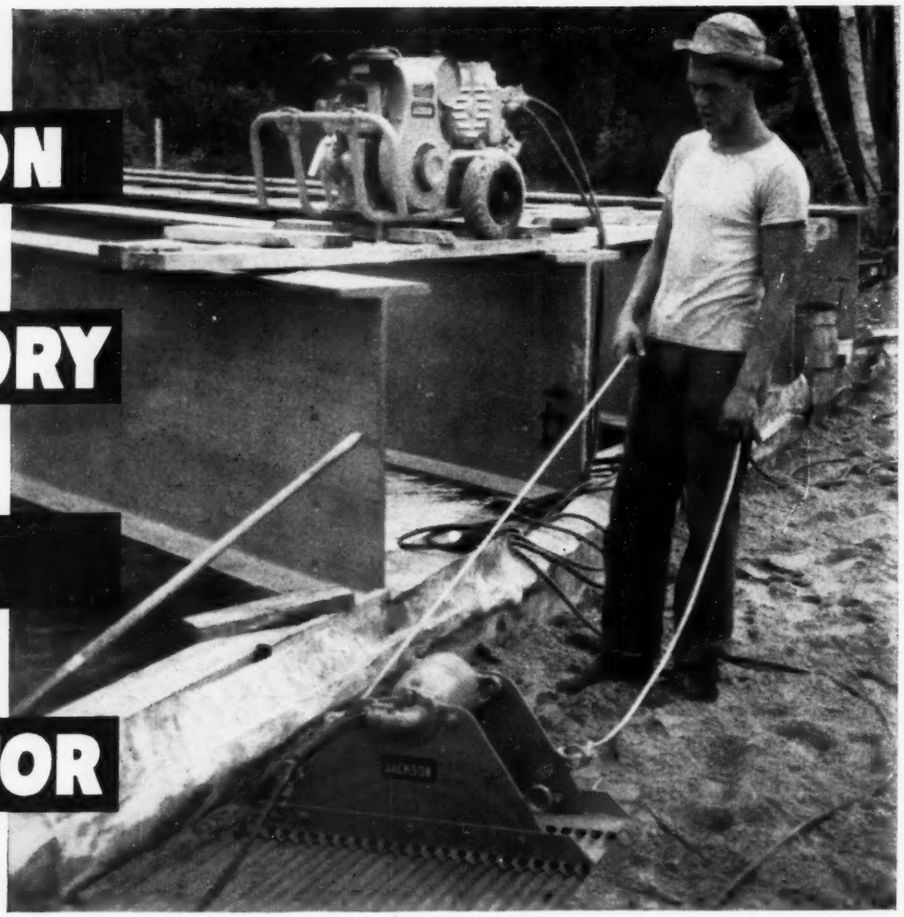
CENTERFIT, an exclusive J&L product, is the most outstanding development in wire rope construction since the invention of preforming! Since men first started moving material with cable controlled machines they have sought *stronger, longer lasting, lighter weight* cables to lift *heavier* loads at *faster speeds*. J&L wire rope engineers and production men have now perfected a new rope fabricated for the most costly, toughest "rope eating" jobs in the material handling business . . . closing lines on clamshells, hoisting lines on power shovels, cable controls on wagon scrapers, rooters and other rugged earth-moving equipment. CENTERFIT with its inter-laid multi-strand construction *is the answer!*

The experience of M. Bennett & Son's, general contractors, of Indiana, Pa. is typical of the 71 contractors who have used CENTERFIT. Fred McCauley, J&L wire rope engineer, asked Ira King, Bennett's maintenance engineer, to try "something new" on the troublesome closing line on a 2½ yard clamshell working on a slag unloading job at Blairsville, Pa. On this job, the best conventional wire ropes averaged only 4 days service—7 days at the most. J&L CENTERFIT rope after a full week was operating perfectly with little sign of wear. Two weeks, three weeks passed—finally, after *four weeks* the rope was taken out of service. The performance was *four times better* than anything King or Bennett had ever seen! They naturally ordered more CENTERFIT and soon had it working on 15 other pieces of equipment. Bennett's skilled operators found that CENTERFIT does not backlash and snarl on overruns, making possible 20% faster operation by eliminating drum-locking, kinks and "birdcages."

The special construction of CENTERFIT provides a greater distribution of stress and wear, gives longer rope service life and up to 25% savings on sheave and drum maintenance. J&L CENTERFIT *costs no more than ordinary wire rope.* Your local J&L distributor or J&L warehouse is now stocked with most sizes of this new money saving rope. Descriptive literature giving complete technical information about CENTERFIT will be sent you on request. Write Wire Rope Department, Room 912, Jones & Laughlin Bldg., Pittsburgh 30, Pennsylvania.

JONES & LAUGHLIN STEEL CORPORATION

The JACKSON VIBRATORY SOIL COMPACTOR



"Pre-Settles" Bridge Approaches

ETC., QUICKLY • INEXPENSIVELY!

This remarkable new machine will give you up to 95% of MAXIMUM DENSITY (in granular soils) IN A SINGLE PASS — and do it in less than one-fifth of the time the job may be attempted with other equipment! Eliminates long delays in paving and paving settlement; assures solid sub-base for factory concrete floors on which heavy machinery is to be mounted.

Note these features: 1. PROPELS ITSELF AT 6' to 8' PER MINUTE . . . under normal conditions. Operator has nothing to lift or drop; he simply guides it.

2. FIRMLY COMPACTS 15 sq. ft. to 18 sq. ft. PER MINUTE TO A DEPTH OF 12 INCHES!

3. WEIGHS ONLY 150 LBS. Two men can easily throw it on a truck or carry it to nearby locations.

4. TIME-TESTED VIBRATORY MOTOR — used on our standard equipment for 25 years. Operates on 3-phase, 110 volt, 60 cycle AC.

It's the ideal soil compactor for those areas inaccessible to the large, tractor drawn equipment. With a change of bases, it is also highly effective on coarse gravel and rock, and for smoothing and compacting blacktop. What "pre-shrinking" is to the cotton shirt, vibrating with the Jackson Compactor is to bridge approaches and similar fills. Write, NOW, for the complete facts!

THE MODEL M-2 PORTABLE POWER PLANT (see photo) usually furnished to operate Jackson Soil Compactors generates both single-phase and 3-phase 110 volt, 60 cycle AC. May be used for lights and power tools as well as running the Compactors. Will operate 4 Compactors simultaneously. JACKSON Power Plants are known throughout the nation for their outstanding reliability.

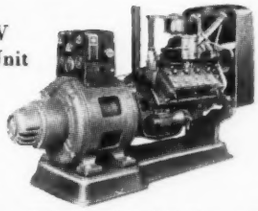
ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Mich.

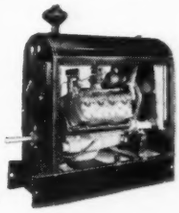
KRW INDUSTRIAL POWER PLANTS

CUT COSTS 40-50%... THIS NEW BOOK GIVES ALL FACTS ABOUT THESE FAMOUS LOW COST FORD-POWERED, EASILY SERVICED UNITS... THOUSANDS IN DAILY USE

Write for it today!

KRW 20KV Generating Unit





KRW Industrial Power Unit (enclosed type)

KRW Special Pumping Unit

● **Powered by the famous Ford V-8—100 H. P. Truck Engine, KRW Industrial Power Units operate on Gasoline (tax free), Natural Gas or Butane. Their maintenance and repair cost is held at a minimum because of around-the-corner and world-wide, low-cost Ford service and the Ford Engine and Parts Exchange Plan. Mail the coupon for this informative book today.**

K. R. WILSON

BUFFALO 3, NEW YORK

25

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

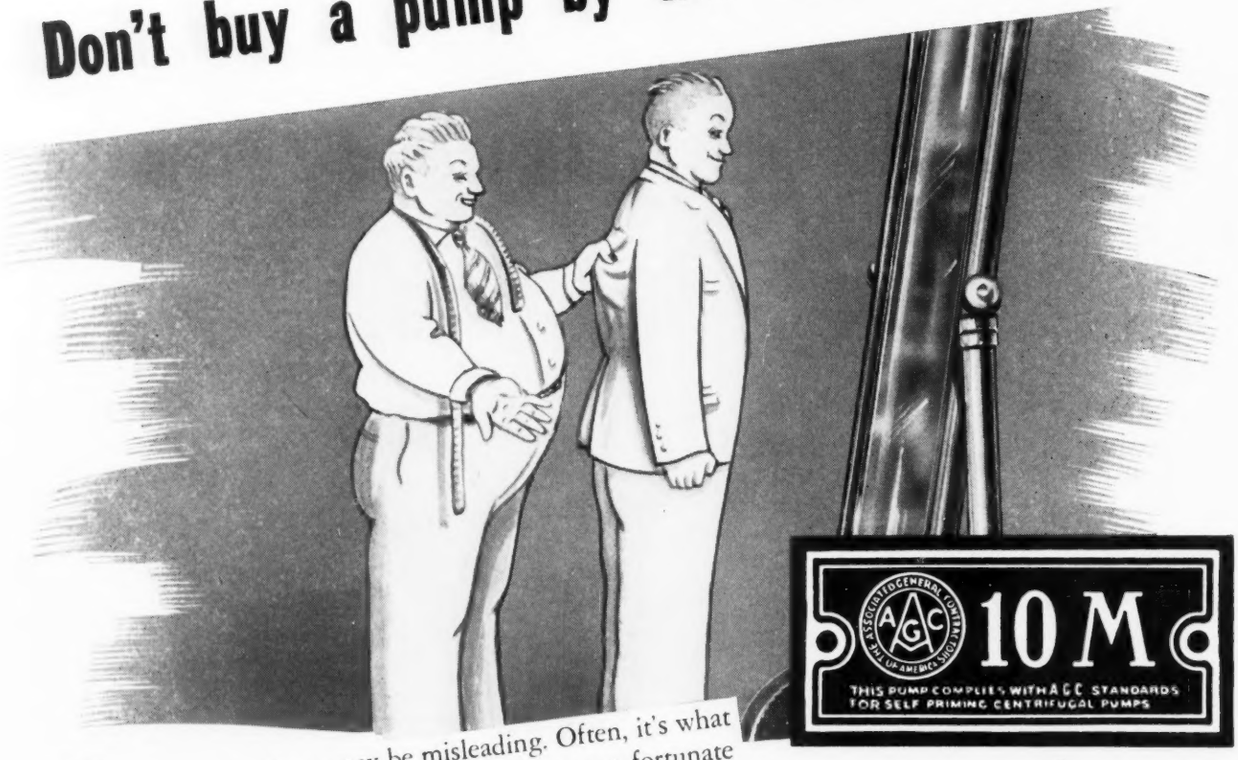
Please send me a copy of the new KRW Industrial Power Unit Book.

Name .....

Address .....

City and Zone ..... *State* .....

Don't buy a pump by the "fitting" in front



THE "fitting" in front may be misleading. Often, it's what you don't see that makes the difference between a fortunate and unfortunate choice in suits. In pumps, too, suction and discharge sizes may *appear* to "fit" your pumping requirements. But pump "sizes" don't always assure pump performance. It's what a pump will do that counts.

An AGC rating plate is your built-in insurance that the pump you buy will deliver the capacity set up for it by the AGC Contractors Pump standards. It means that, regardless of size, your pump will deliver the amount shown on the plate. For your own protection, look for the AGC rating plate on the next pump you buy.

BE SURE you get your copy of this Users' Pump Manual, prepared by the Contractors Pump Bureau. Contact your distributor or write any of the Companies listed below.

CONTRACTORS PUMP BUREAU

(ESTABLISHED 1938)

Affiliated with

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC.

BARNES MANUFACTURING CO.
Mansfield, Ohio

CHAIN BELT COMPANY
Milwaukee, Wis.

JAEGER MACHINE COMPANY
Columbus, Ohio

C. H. & E. MANUFACTURING CO.
Milwaukee, Wis.

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

MARLOW PUMPS
Ridgewood, N. J.

WORTHINGTON PUMP & MACHINERY CORP.
Holyoke, Mass.

STERLING MACHINERY CORP.
Kansas City, Mo.

CARVER PUMP COMPANY
Muscatine, Iowa

THE GORMAN-RUPP COMPANY
Mansfield, Ohio

NOVO ENGINE CO.
Lansing, Mich.

Widest Range
OF MODELS ON THE MARKET

ADC-750	FOR TRUCK SERVICE Maximum Gross Vehicle Weight Rating—30,000 Pounds
ADCR-750	FOR TRACTOR SERVICE Maximum Gross Combination Weight Rating—50,000 Pounds
ADF-750	FOR TRUCK SERVICE Maximum Gross Vehicle Weight Rating—33,000 Pounds
ADFR-750	FOR TRACTOR SERVICE Maximum Gross Combination Weight Rating—50,000 Pounds
ADC-900	FOR TRUCK SERVICE Maximum Gross Vehicle Weight Rating—35,000 Pounds
ADCR-900	FOR TRACTOR SERVICE Maximum Gross Combination Weight Rating—65,000 Pounds
ADCW-950	FOR TRUCK OR TRACTOR SERVICE Maximum Gross Vehicle Weight Rating—45,000 Pounds Maximum Gross Combination Weight Rating—70,000 Pounds
ADCW-970	FOR TRUCK OR TRACTOR SERVICE Maximum Gross Vehicle Weight Rating—55,000 Pounds Maximum Gross Combination Weight Rating—90,000 Pounds

THE ONLY TRUCKS WITH . . .
GM 2-Cycle Diesel Power and Specially Designed Diesel Chassis

GMC builds Diesel trucks for every type of heavy hauling . . . over-the-road or off-the-highway. There are trucks, tractors and six-wheelers . . . conventional and cab-over-engine . . . eight basic models . . . 18 chassis types, with gross weight ratings from 30,000 to 90,000 pounds.

All have famous GM 2-cycle Diesel engines which provide twice as many power strokes as the conventional 4-cycle design . . . which allow greater payload because of less engine weight. And there are two engine sizes, both with such high efficiency GM Diesel features as Direct Triple Duty Injectors, Full-Flo Lubrication and Pressurized Water Circulation.

Teamed up with these exclusive, outstanding power plants are chassis especially and exclusively designed and engineered for Diesel work. Before you buy any Diesel truck, investigate the many advantages you get *only* when you get a husky, heavy hauling GMC.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

Built by Board of County Commissioners, Dade Co., Fla., Earle M. Rader, County Engineer. J. E. Greiner Co., Consulting Engineers.

ON THE RICKENBACKER CAUSEWAY

AGAIN Monotubes play an important part in an engineering triumph—the Rickenbacker Causeway, Miami, Fla.

1260 7-gauge Monotube tapered steel piles, 45′ long, with 18″ butt diameter, were used in the piers of the fixed-beam bridges for this project. Piles were capped at the water line.

For this job, as on so many others, Monotubes were chosen because of their time-and-money-saving advantages. *They are cold-rolled and fluted for extra strength,* resist bending forces equally well from all directions. *They're light in weight, easily handled, extendible right on the job. Tapered design speeds driving—tubular construction makes inspection easy before concreting.*

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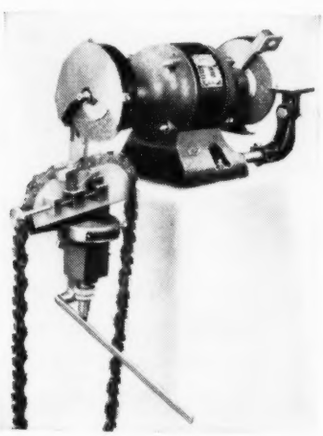

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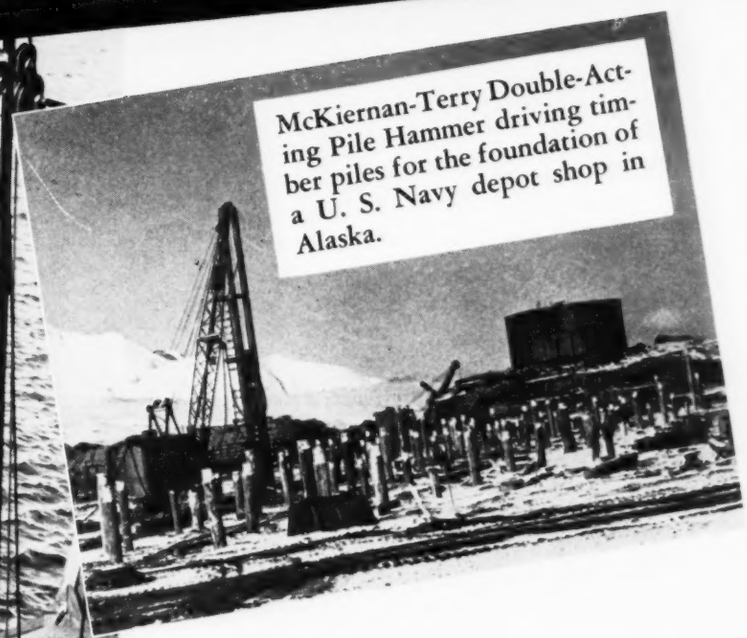

McKiernan-Terry Double-Acting Pile Hammer driving timber piles for the foundation of a U. S. Navy depot shop in Alaska.

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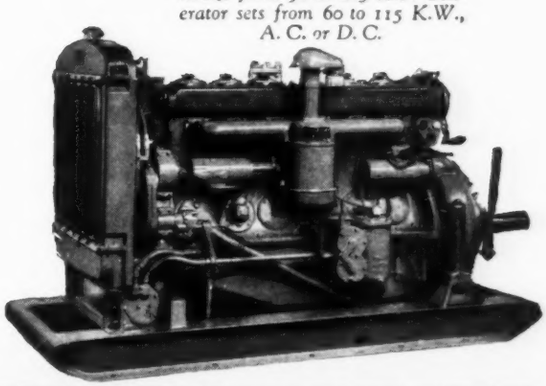

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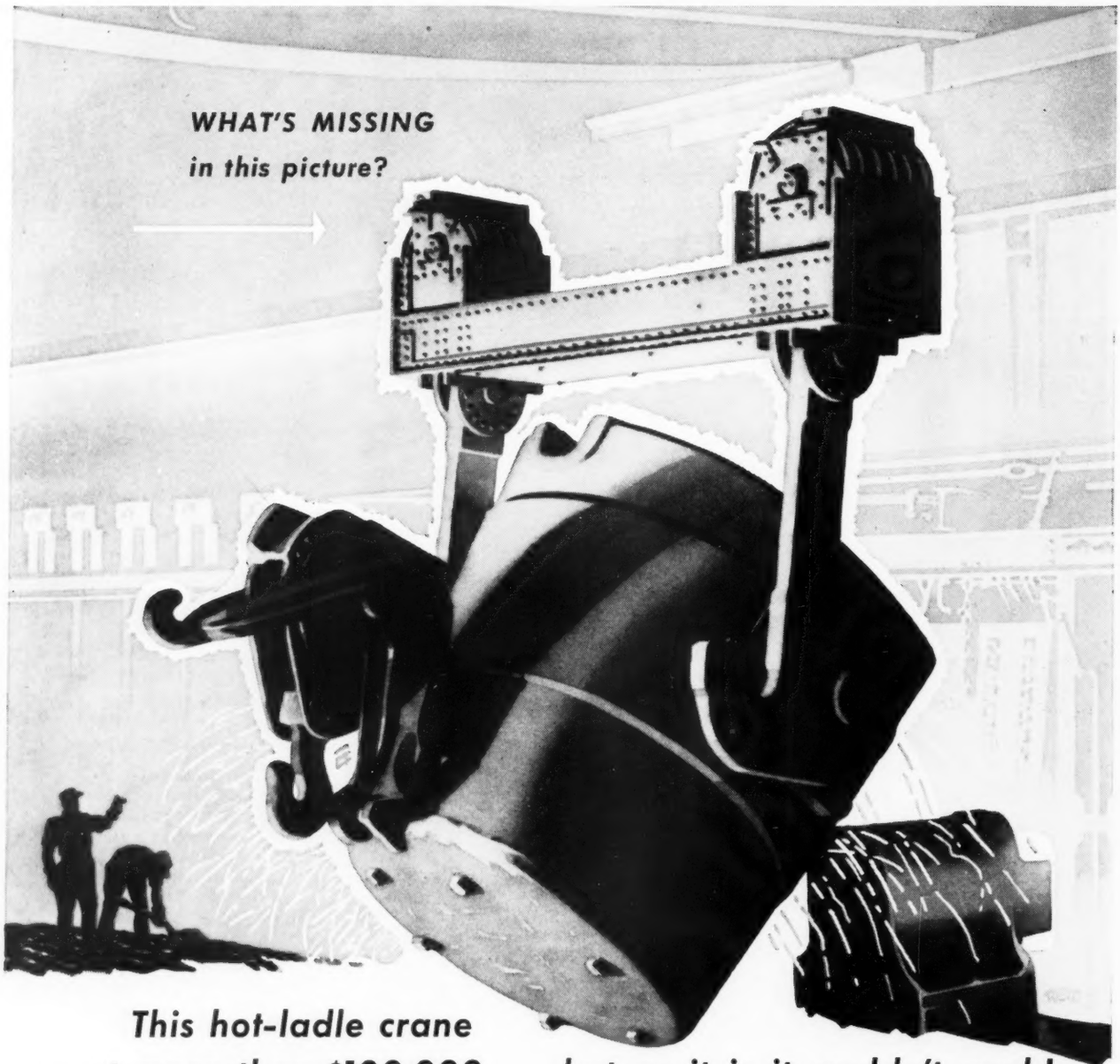

This hot-ladle crane cost more than $100,000 . . . but as it is it couldn't work!

You don't use this sort of equipment in construction, but it affords a splendid example of where false economy might be extremely costly.

This gigantic, 100-ton, ladle crane cost well over $100,000—but it couldn't pour a drop of molten metal without wire rope. That's what's missing in this picture. How much does wire rope cost? Ordinary wire rope—about $1500. The superior wire rope—Preformed Improved Plow Steel—about $1800.

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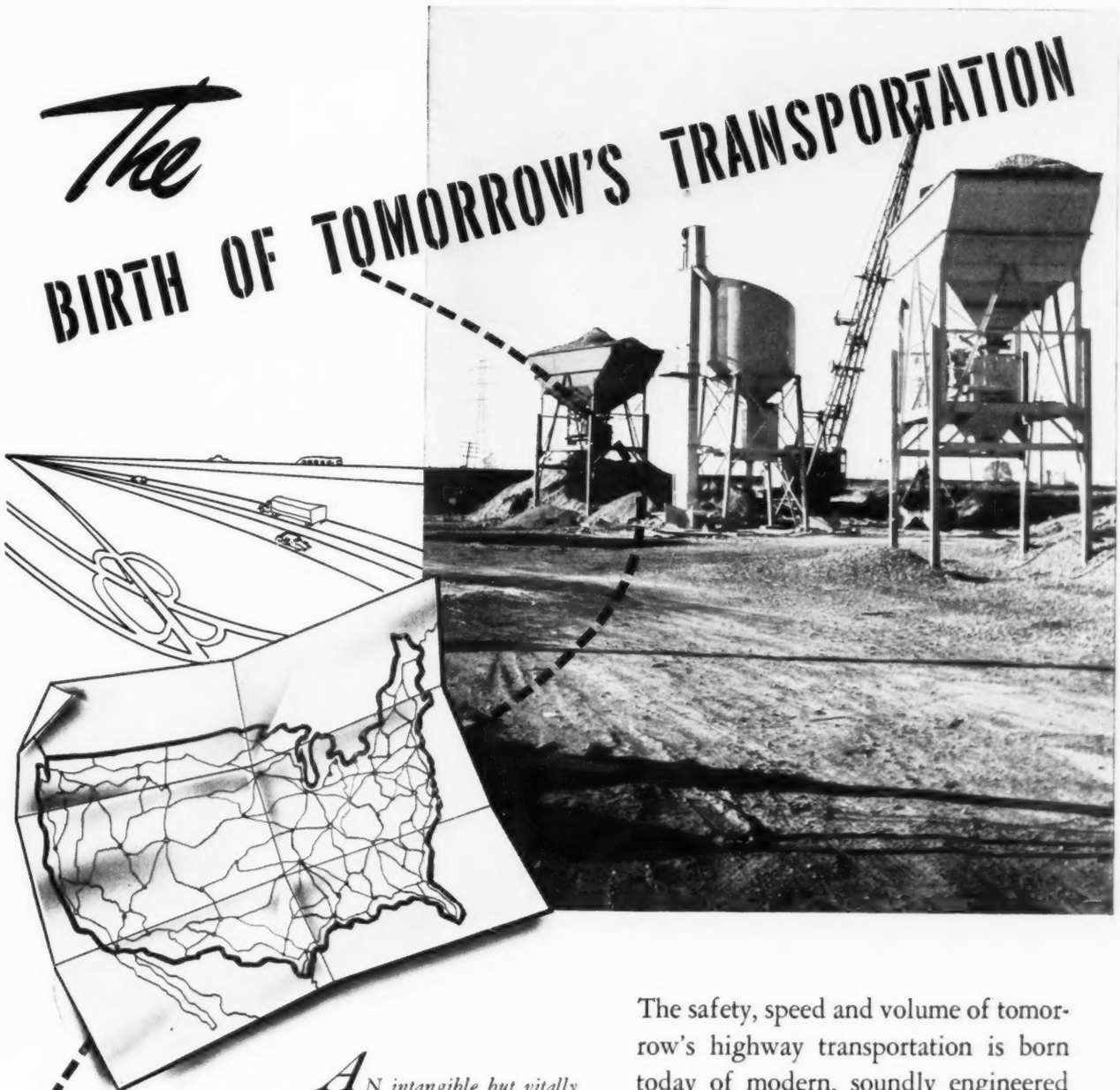

AN intangible but vitally important element in construction equipment is the engineering which gives it structural strength, economical operation and long-life. But Butler Engineered Design goes farther: The site, the size and type of work, accessability of materials, their volume and their transport are all given careful study and are reflected in the greater efficiency of Butler Construction Equipment.

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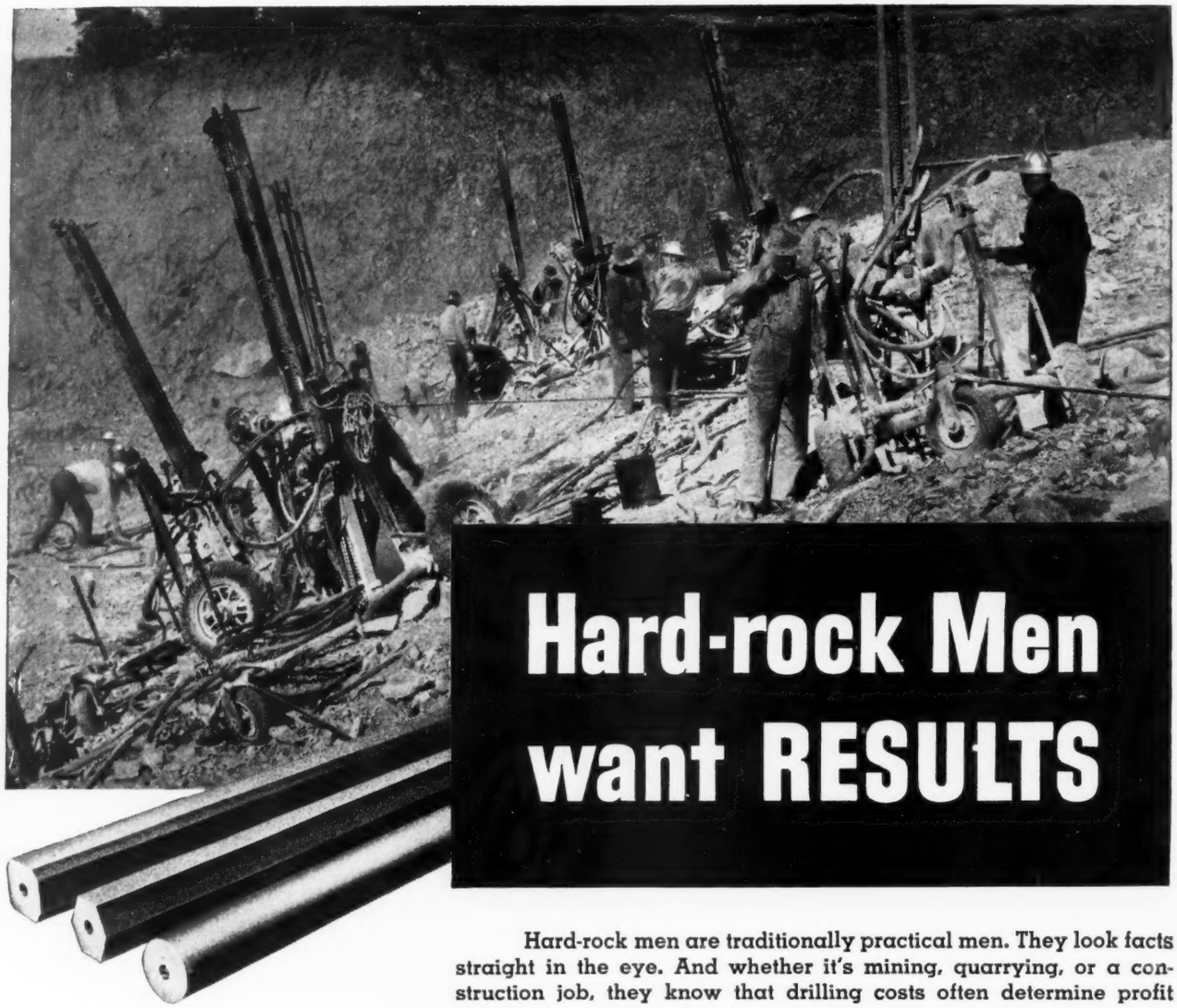

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BETHLEHEM STEEL

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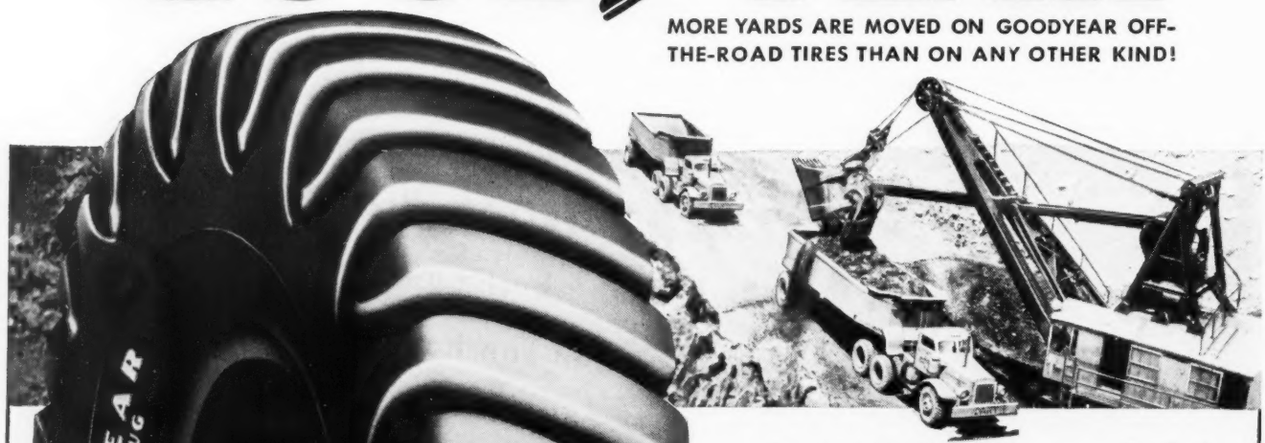
TAKE the measure of the toughest, tire-bruising jobs with this super-tough tire. It's Goodyear's Hard Rock Lug—built to take punishment and keep coming back for more. Its massive lug bars guard tread and sidewalls against cuts and ruts. Its extra-thick undertread armors the rayon cord carcass against bruising impacts. And its self-cleaning universal tread gives you full traction reverse or forward.

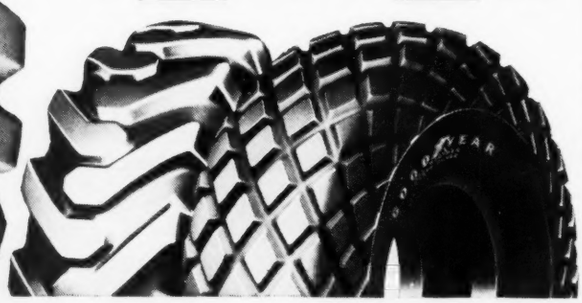
Fact is, this big-stamina tire—*first choice on tough jobs* — comes through with low-cost, long-life performance that's typical of the job-proved Goodyears available for *any* job. And it's one more reason why year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind!*

GOODYEAR

MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND!



A right tire for each job



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for maximum traction
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EARTH MOVER ALL-WEATHER
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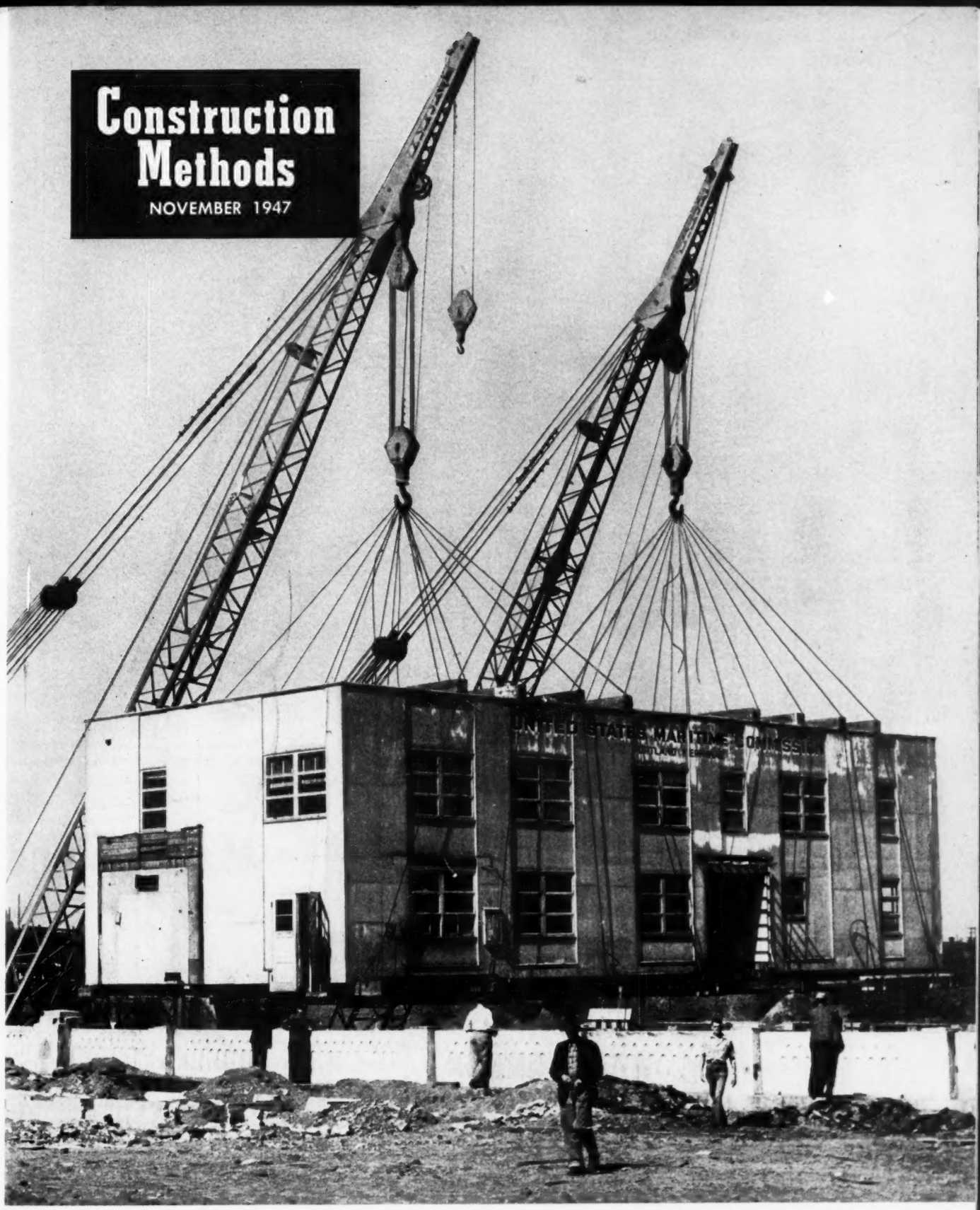
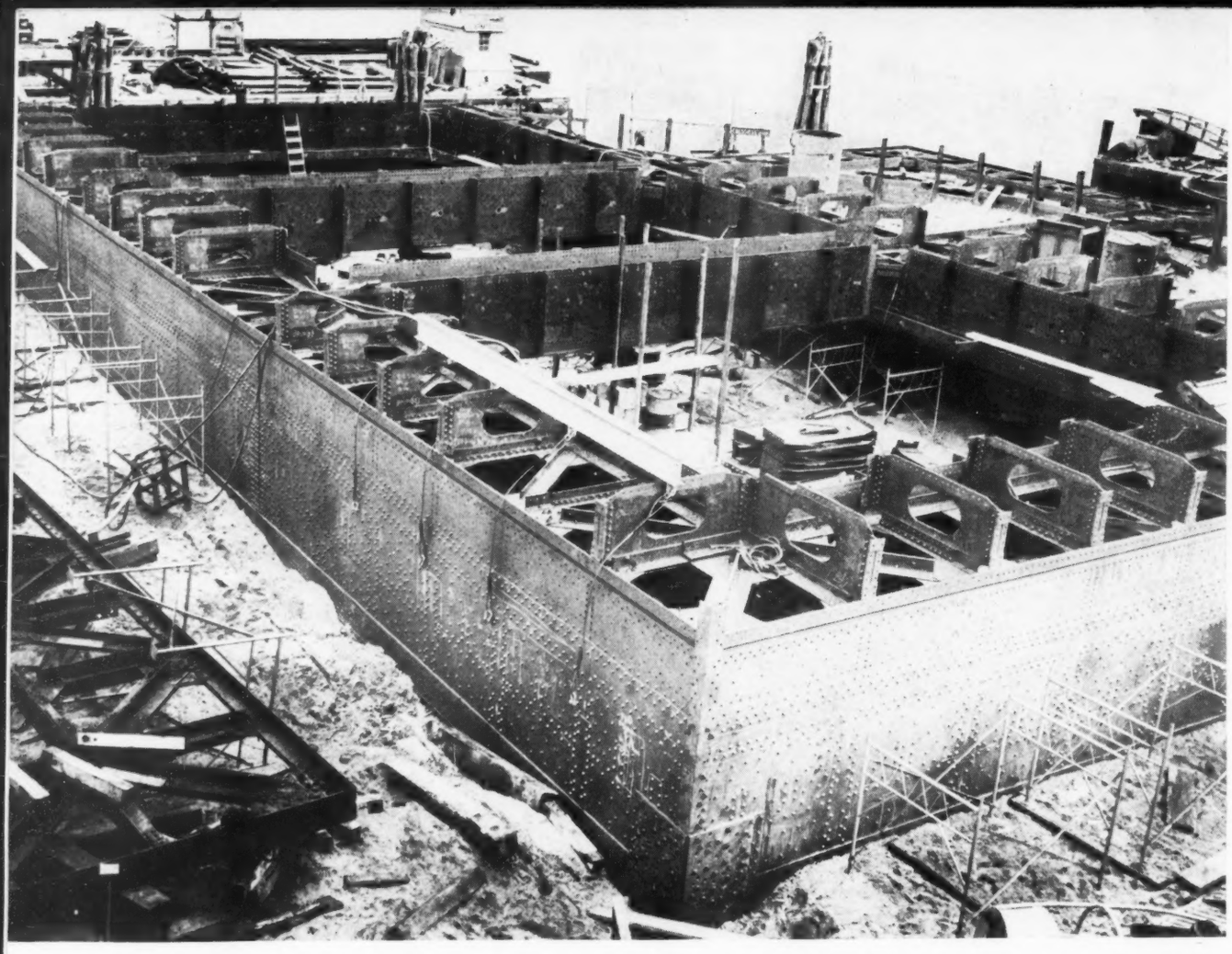
Construction Methods
NOVEMBER 1947



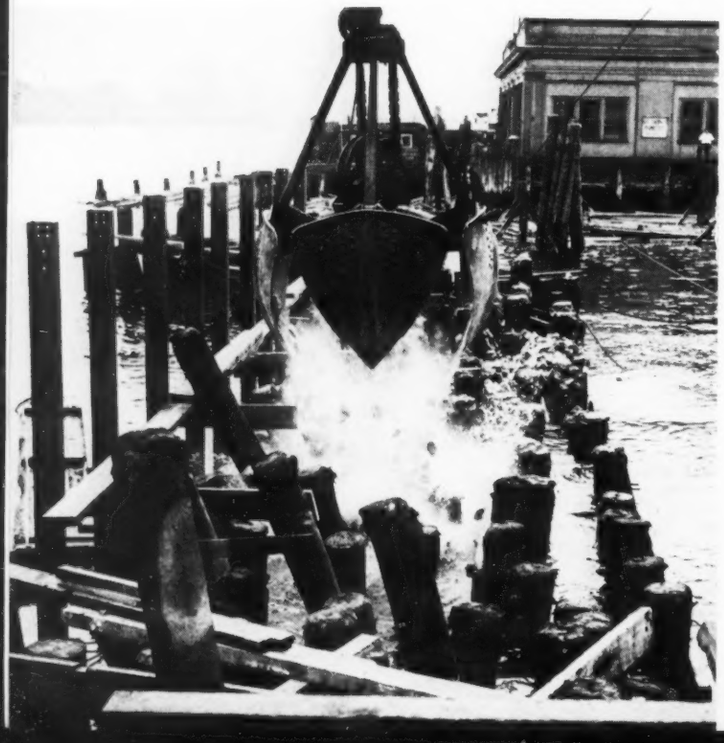
Cranes Give Building a Ride

TWO 80-TON CRANES, acting in unison, lift 100-ton building from its foundation in Portland, Ore., and load it on barge for two-mile trip up Willamette River to new location. Job was done by General Construction Co., who purchased former Maritime Commission building for new office. To equalize load on all pickup points, cable slings were loosely clamped, then strain was taken on load lines and ties were made fast. From then on it was simply a matter of operators following the signals.



BIG CAISSON STARTS DOWNWARD through man-made permanent island for ventilation shaft of Brooklyn-Battery tunnels under New York Bay. Box is made up of double steel walls filled with concrete. Two cross-walls divide structure into three dredging pockets.

Big Caisson Sunk Through Man-Made Island



TO VENTILATE the 1.7-mi. Brooklyn-Battery twin vehicular tunnels a big steel open caisson is being sunk 77 ft. below M.H.W. to rock through a man-made permanent island just offshore from Governors Island in Upper New York Bay. The caisson, 51x111 ft. with 6½-ft. concrete-filled walls, and divided into three compartments by two 4-ft. cross-walls, will serve, along with an additional 63 ft. of rock shaft below the cutting edge of the caisson, as a ventilation shaft for the two tunnels. A ventilation building containing fan equipment will rise above the caisson and will be supported on the caisson and eight separate 5½-ft. cylindrical piers driven through the island to rock.

The dual tunnel will be ventilated from three

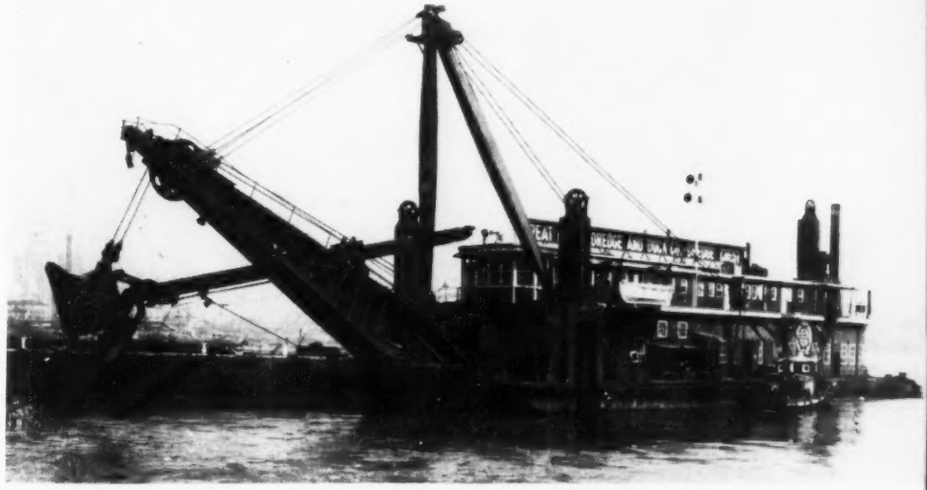
←

FENDER PILES ARE INCASED in rock fill dumped into place with orange peel buckets after row of H-beam soldiers has been placed inside of fender system to carry lagging to retain sand fill.

ISLAND LIMITS ARE DEFINED by permanent wood-pile fender system of vertical and batter piles driven with floating rigs.

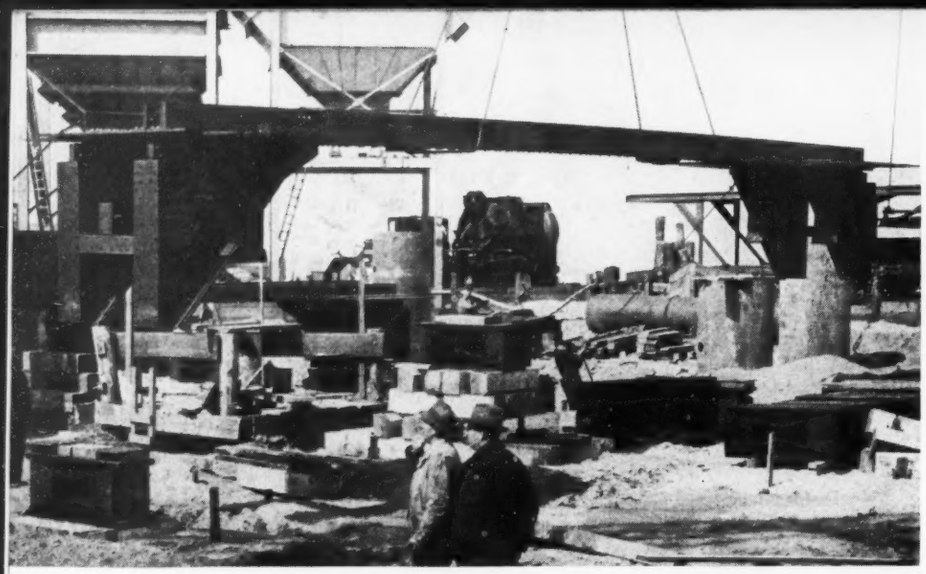
points; one near each portal, and the Governors Island shaft and building at about midpoint. Grow Construction Co., New York contractor for the latter shaft, did an excellent job in preparing the island and in setting up the caisson and is sinking the box with extreme care within close tolerances. The caisson was sunk by open dredge methods through 70 ft. of earth, and compressed air will be used to enter the caisson 7 ft. into rock, at which location it will be sealed. The open dredge excavation was by clamshell bucket, and no attempt was made to keep the water pumped all the way down.

First step in island preparation was to dredge the hardpan at the site to El. 244 (Job datum—



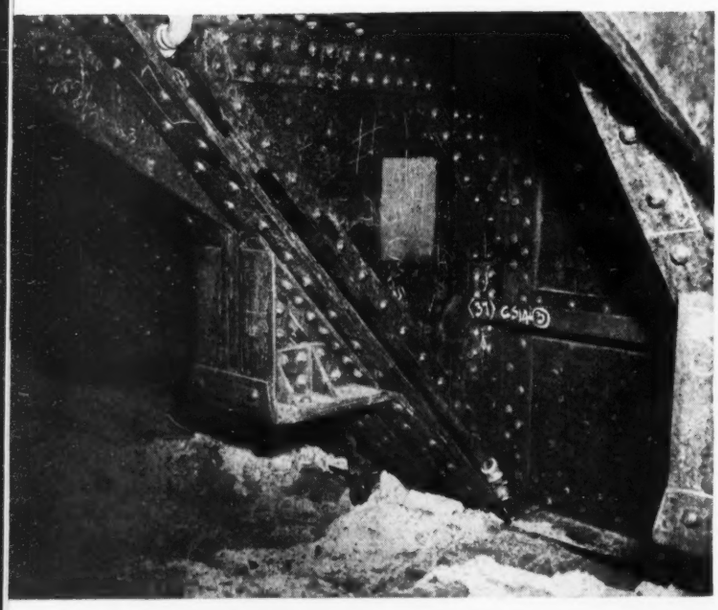
FIRST STEP is dredging hard harbor bottom to within 12 ft. of rock with big dipper dredge, "Crest." Site was then partly backfilled with 10-ft. clay blanket.

SAND BALLAST (below) from incoming freighters from all ports of the world serves as part of sand fill—which totals 46,000 cu.yd. —to create artificial island through which caisson is sunk.

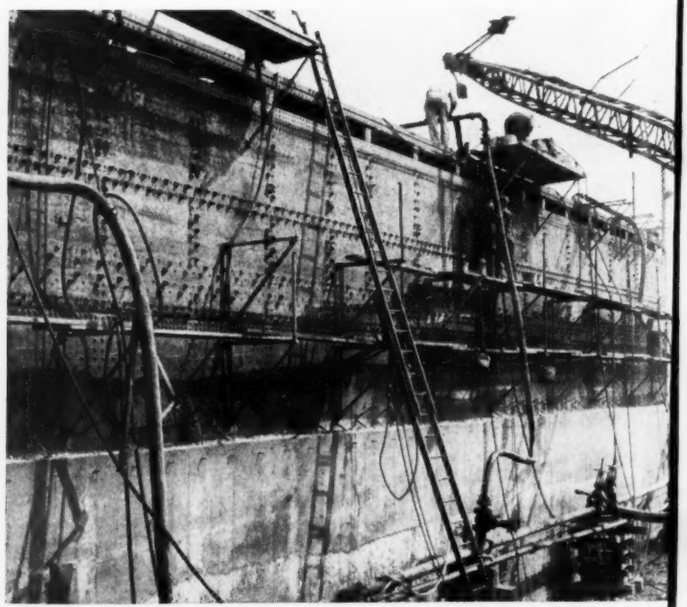


FIRST SECTION OF CAISSON, cutting edge girder sub-assembly, is set on wedge jacks. Structure was erected to height of 27 ft., and weighed 890 tons, before weight was transferred from 24 jacks to cutting edges and sinking started.

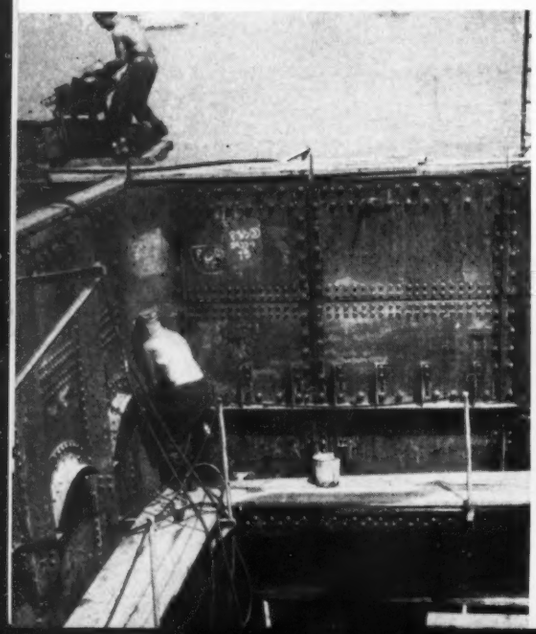
M.H.W. El. 300) with Great Lakes Dredge & Dock Company's big dipper dredge "Crest." Then a permanent fender system of vertical and battered creosoted wood piling was driven around the perimeter of the proposed island, an octagonal area 200 ft. in diameter. The next step was to place a single row of H-beam soldier beams around the inside of the fender piles. The soldiers were supported near the top by deadmen anchors consisting of ¾x1¼-in. tie-bars and an anchor of stiffened ½-in. plates later buried in the sand fill of the island. Then the fender piles were incased in 25,000 cu.yd. of dumped stone riprap to stabilize



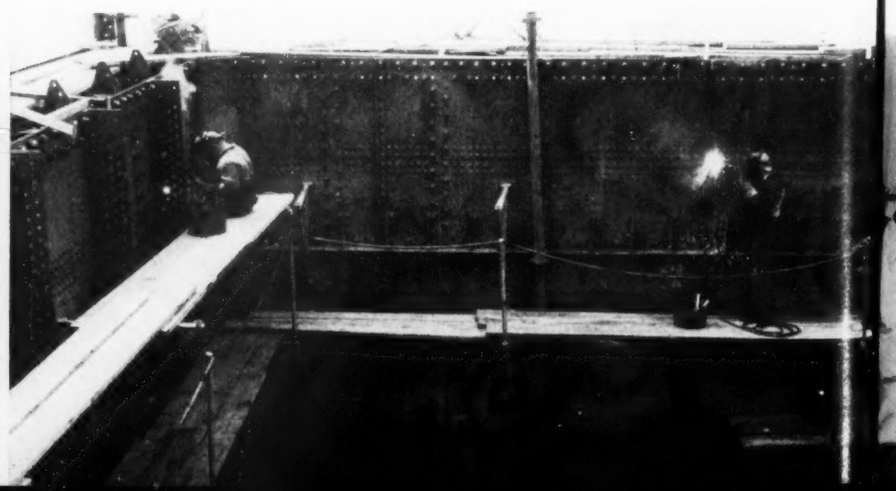
CUTTING EDGE OF CAISSON, seen from inside, carries jetting system of 56 nozzles fed by 8 risers with 7 nozzles to each riser, all served by 6-in. header outside of box. During early caisson erection, structure was supported on wedge jacks bearing against heavy brackets showr here.



RISERS FROM OUTSIDE HEADERS lead over top of cassion to insi.e jetting system. Riveting scaffolds hang from strap loops welded to outside skinplate. This view shows start of outside concrete protection wall poured against upper part of caisson.



RIVETING, WELDING, AND CONCRETING (left and below) time-controlling elements in caisson sinking, are done during day shift only, while excavation and sinking operations are carried on at night. Caisson contains 201,000 field rivets; all seams in skinplates are welded watertight.

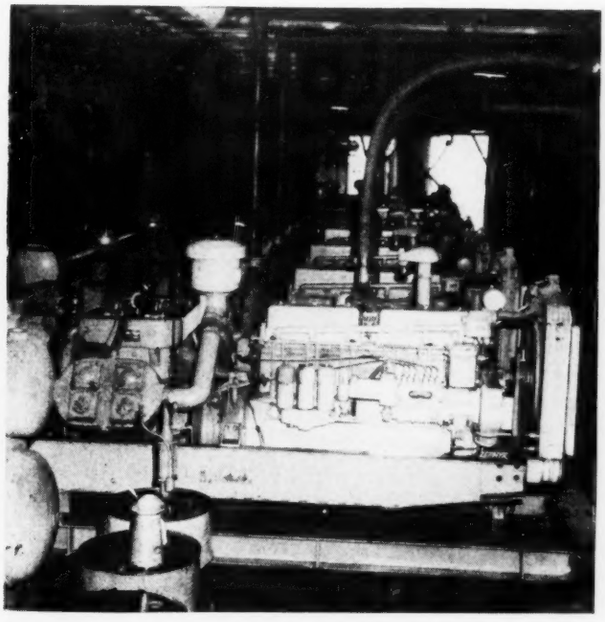


the piles and act as a rough retaining levee.

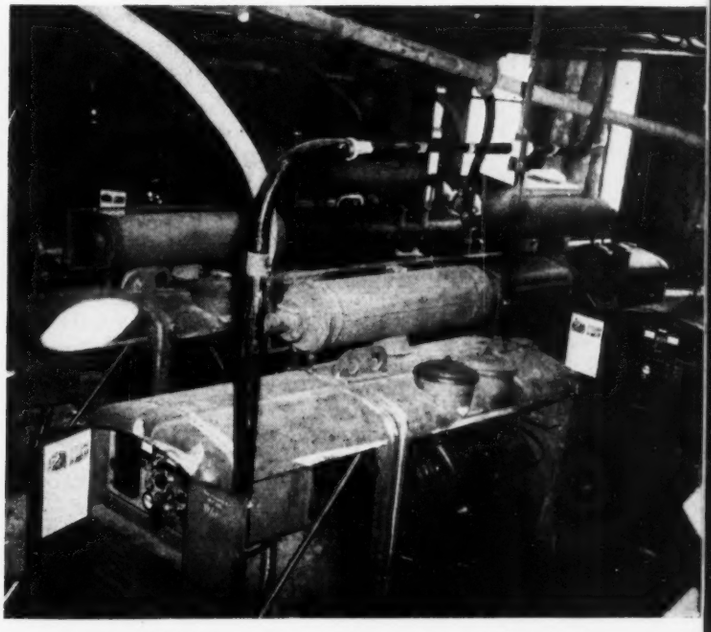
To start the island, 5,500 cu.yd. of clay was dumped as a 10-ft. blanket at the bottom of the dredged area (El. 244-254) to form a water seal for the caisson to pass through; then the island was built up with 46,000 cu.yd of sand. The fill came from all over the world, for it was mostly ballast removed from incoming ships and furnished by The Moran Towing & Transportation Co. As the fill built up to the inside top of the riprap, a horizontal sheeting was placed between the H-beam piles to hold the fill.

For erection of the caisson, and

OLD FERRYBOAT serves as job shop and compressor and power plant. Pilot house becomes small job office.



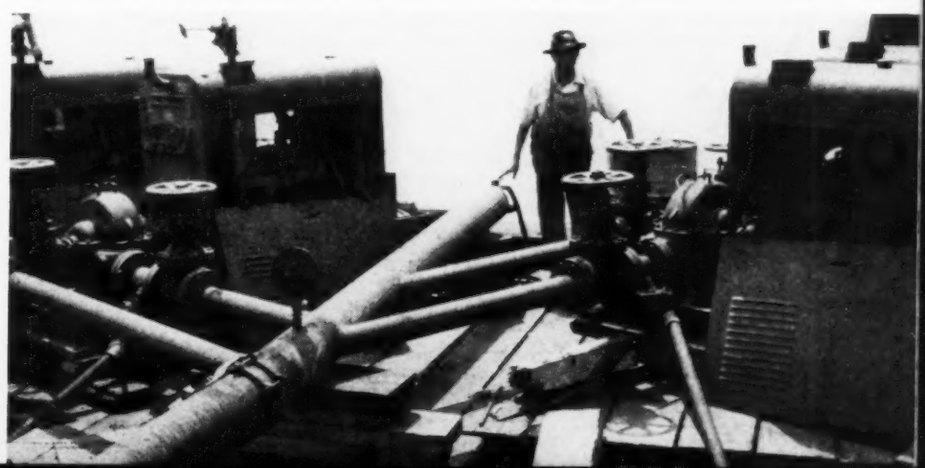
COMPRESSED AIR is supplied by 18 Gardner-Denver diesel-driven 500-ft. portable compressors lined up on ferryboat deck. Plant furnishes sufficient air for pneumatic sinking of caisson.



JOB ELECTRIC POWER comes from battery of ten 60-kw. diesel-driven O'Keefe-Merritt portable generators also located on ferryboat deck. Big pipe headers hanging from ceiling take care of exhaust from all diesel engines.

ON DECK of converted ferry are H. J. **JACOBY** (left), vice-president for Grow Construction Co., and **EUGENE GIBBONS**, engineer.

JETTING WATER for caisson sinking (below) comes from these four Aurora gas-driven pumps discharging into single header line through welded Siamese connections.



STEEL FORMS for concrete protection wall on upper part of caisson are made up of J&L Junior Panels. Here they are receiving form-oil spray prior to erection.

for handling the excavation, two American steel stiffleg derricks were set up on their own pile foundations at opposite corners of the island. Their 115-ft. booms, good, after reinforcing, for 33 tons at 88-ft. radius, cover the entire operations. They were originally designed for electric operation, but when electric motors were unobtainable, the contractor installed D-13000 Caterpillar diesel engines for boom and load line drums and Gardner-Denver air engines for slewing.

Double Steel Wall Box

The caisson, which will have an ultimate height of 85 ft., is built up of two steel plates 6½ ft. apart for the lower 51 ft., then the plates step in 18 in. on the outside wall. Double steel walls continue to a total height of 75 ft. above cutting edge, while a single outer plate and steel column and beam construction forms the top wall of the caisson above the double steel walls. Space between outside and inside plates is filled with concrete and, in the upper part, 18 in. of concrete is poured against the outside, held by welded reinforcing, keeping the walls uniform width to a height of 75 ft. The two crosswalls are steel plates filled with concrete. All walls are braced with horizontal trusses set between the skin plates. The caisson is fabricated by riveting, but all joints in the skin plates are sealed by welding. The caisson, now completed, contains 2,025 tons of structural steel and plates, fabricated with 201,000 field rivets.

On Oct. 24, when this issue went to press, the caisson was almost in final position, with only a short distance to go. Sinking was stopped until a steel air deck could be placed over the top of the working chamber so the box could be landed and sealed under compressed air.

Caisson Erected on Wedge Jacks

The caisson cutting edge and lower girder, making a total of 360 tons in the first 7 ft., were erected on 24 200-ton wedge jacks, which kept the box level within 1/16 in. at all supports during erection. The structure was built up 27 ft. high and weighed 890 tons before the jacks were removed.

Excavation is by 1½-yd. Hayward clamshells handled by the derricks, and spoil is loaded into dump barges alongside. Sinking is aided by jetting through 56 jet nozzles set inside the cutting edge. These jets are served by eight risers which, in turn, connect to a 6-in. header outside the box, supplied by four pumps each delivering 550 gpm. at 300 ft. head.

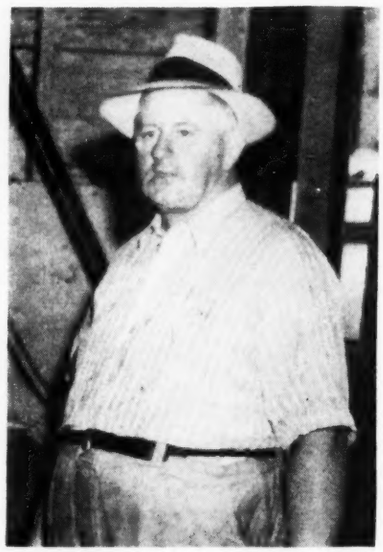
Because riveting was the controlling element in progress, excavation is done at night, leaving the daylight hours to the riveting and concrete operations. Concrete, running 80 cu.yd. per ft., is placed in 8-ft. lifts by a 200 Double 8-in. Pumpcrete machine set under a 28-S Ransome mixer mounted on its own pile foundations.

Forms for the outside shelf concrete are made up of 12-in. J&L Junior steel channels with 1½-in. flanges, fabricated into various size panels.

The contractor set up his compressor and generating plant and shop in the old steel-hull ferryboat "Tenafly." On the main deck are 18 Gardner-Denver diesel-driven 500-ft. compressors furnishing both low and high pressure air, and ten 60-kw. GM diesel-electric generating plants. All diesel exhaust is piped off through headers. Diesel fuel is supplied from Seabee pontoon storage tanks on the top deck which are, in turn, filled from two 10,000-gal. storage tanks. The pilot house makes a neat, though small, field office.

The Brooklyn - Battery Tunnel project is being built by the Triborough Bridge and Tunnel Authority, for which Ralph Smillie is chief engineer. John White is resident engineer in charge of the Governors Island shaft.

For the Grow Construction Co.,



RESPONSIBILITY for operation and maintenance of all equipment on job falls on BILL RODGERS, contractor's master mechanic.

Charles Goodman is president, J. J. Elkins, treasurer; H. J. Jacoby, vice-president, and Robert Goodman, secretary and engineer in charge.

Eugene Gibbons and George Fox are engineers for the contractor. Luke White is general superintendent; William Rodgers is master mechanic; Peter Ullstrum is steel superintendent, and Joseph Weaver is shaft superintendent. Gerhard Nilsson is dock builder foreman.

Cited for Service

ORVILLE W. CROWLEY

CONTRACTING IN IOWA owes a lot to Orville W. Crowley, for he has been guiding the contractors of that state, fighting with them and for them and for the contract system of construction for a quarter of a century. Ever since he helped organize the Central Branch, Associated General Contractors of America, at Des Moines early in 1923, he has devoted his entire efforts to the welfare of Iowa contractors as executive secretary of the association. Upon recent reorganization of the branch as the A.G.C. of Iowa he was retained in his long-time position.

Crowley is a native of Iowa, born near Grundy Center Sept. 16, 1891 and raised at Maurice. As a student at Iowa State College he worked summers for the Iowa State Highway Commission, and after graduating as a civil engineer in 1913 stayed with the department for three years as resident engineer. From 1916 to 1921 he worked directly for the governor, first as engineer for the Capitol Extension Bridge in Des Moines, and then in charge of development of the Capitol grounds, a 90-acre slum-clearing and park development program.

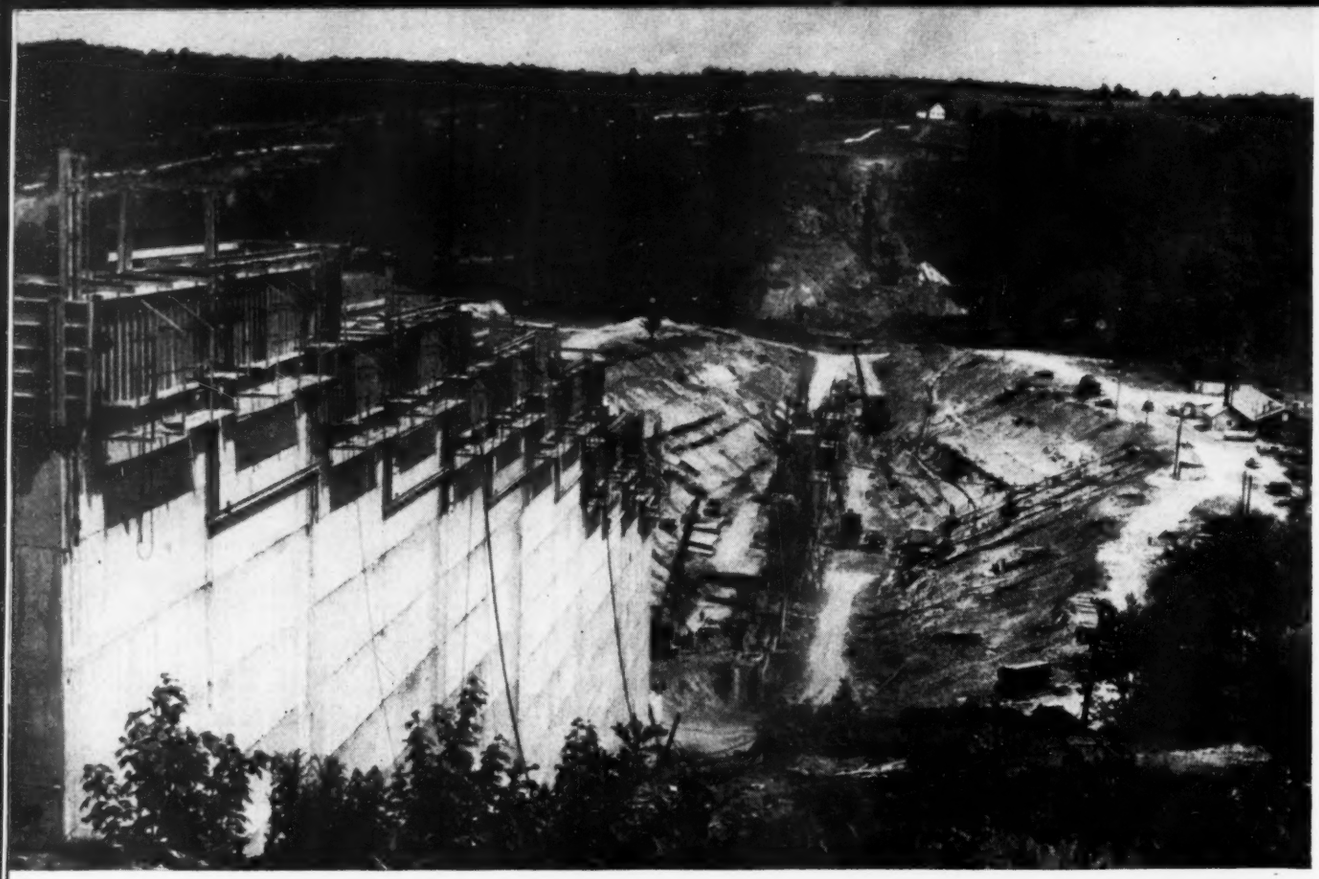
For a year Crowley managed the Iowa Gravel Co., then tried consulting engineering for a while. He was asked by a group of contractors in February, 1923, to help organize the Central Branch A.G.C. and was promptly drafted as executive secretary. Eventually every worth-while contractor in the state joined up, and for years Central Branch was one of the largest and strongest chapters in the A.G.C.

Early in 1942 Crowley was given a leave of absence as project manager for Lytle & Green, managing contractors on the Alaska section of the Alaska Highway. The story of construction triumph over obdurate nature in the raw on that project often has been told. He returned to Des Moines late in 1944.

In the interests of contracting, Crowley has developed fine relationship with all state, county and municipal departments having anything to do with construction. He has been a legislative watchdog, pushing favorable bills and successfully opposing all legislation detrimental to construction or contracting. He has served on the State Building Code Commission, the State Boundary Commission and helped organize the State Apprenticeship Council. He has also been active in engineering circles, and in 1941 received the Anston Marston award of the Iowa Engineering Society for outstanding service to his profession.

Crowley's members have won the respect of their associates throughout the nation, for his chapter has furnished two national A.G.C. presidents: Wm. A. Klinger and Forrest W. Parrott.

What makes contracting tick in this country? Why, it's fellows like Orville W. Crowley, working quietly in the background, plugging day after day for the betterment of the industry.



High up... Concrete cutoff wall for New York City Board of Water Supply's Neversink Dam will stretch 2,460 ft. across Neversink River valley. Base of central part of wall is line of concrete caissons sunk to rock.

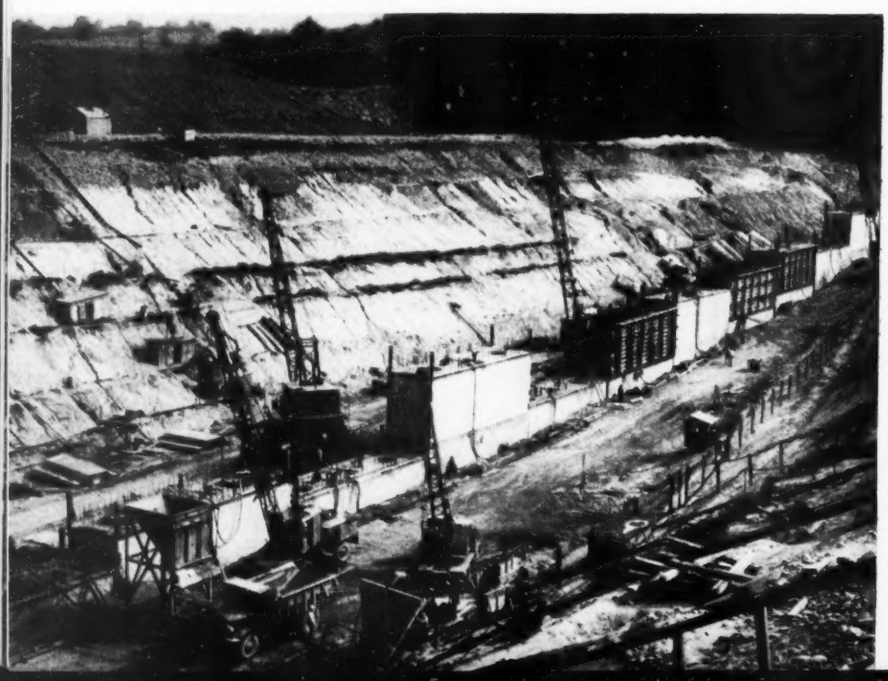
High Dam Cutoff Wall

A 975-FT. LINE of concrete caissons is being sunk to rock through 90 ft. of water bearing sand, gravel and clay as part of a 2,460-ft. cutoff wall for Neversink Dam, latest project in the New York City Board of Water Supply's Delaware water supply system. Pumping from within the caissons and an extensive wellpoint system enable the contractor, S. A. Healy Co., to sink the boxes in free air to keep the job within a fast 18-month schedule.

The dam, at Neversink, N. Y., will be a rolled-fill structure 2,800 ft. long and 200 ft. high (crest El. 1,460) across the Neversink River. Water from its reservoir will flow through a 6-mi. tunnel to Merriman Dam, for which fill is now being placed. (CONSTRUCTION METHODS Oct. '47, p. 76).

Under previous contracts the Neversink was diverted through a tunnel beneath the left abutment, cofferdam embankments were built and two exploratory caissons were put down under air on the dam centerline. Healy's $4,077,000 contract includes excavation of over 500,000 cu.yd. of earth and rock for a cut-off trench, and the construction of a 2,460-ft. cutoff wall.

The trench runs to a maximum

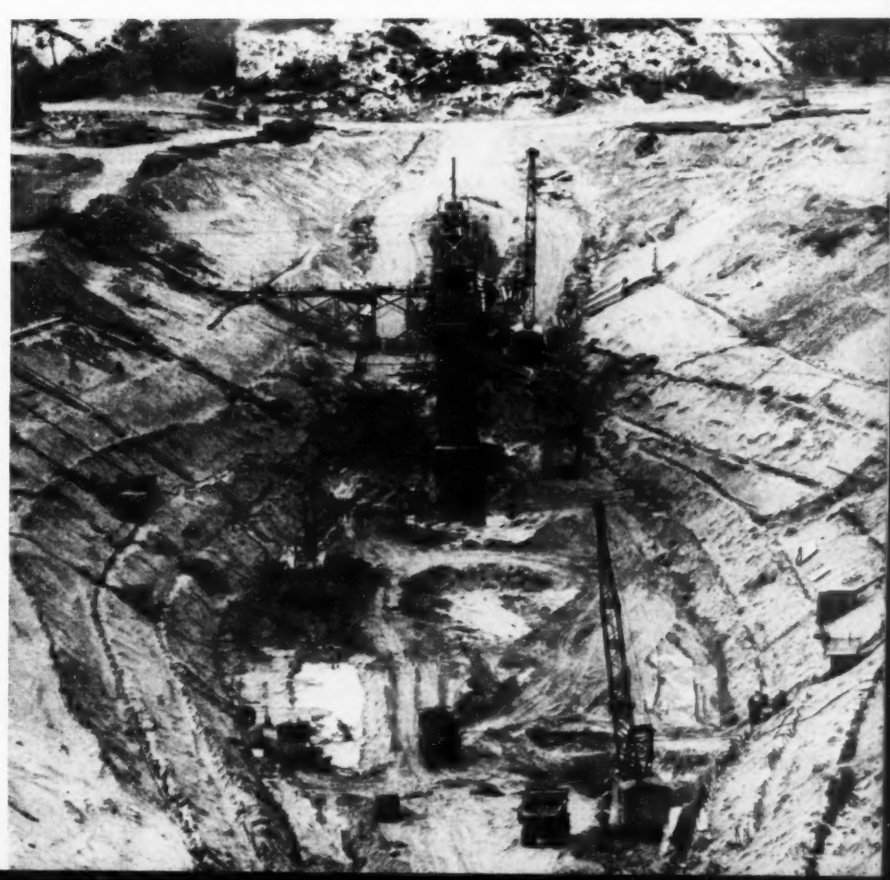


← CAISSONS ARE SUNK in free air from bottom of cutoff trench. Sinking averages 10 ft. per day for each of two units.

Deep down... Landed on rock 90 ft. below bottom of cutoff trench, caissons are underpinned with concrete walls (far unit) or steel stub columns. Undertrench will be cut to solid rock, then concreted and grouted.
Photo by Wm. Standfast, BWS

...all Founded on Deep Caissons

depth of 75 ft., with a 55-ft. bottom width and 1 on 2 side slopes. Excavation was by scrapers, shovel and dragline, and material was disposed of just beyond the up and down stream limits of future dam embankment. In the valley bottom, where the trench has maximum depth, water level was only slightly below original ground surface (El. 1,275), and the contractor intended to dewater with wellpoints. However, a top 20-ft. layer of heavy gravel made it difficult to sink the points, and the existing excavation for the two exploratory caissons was used as a sump until the gravel blanket was passed. As the trench was cut through under-



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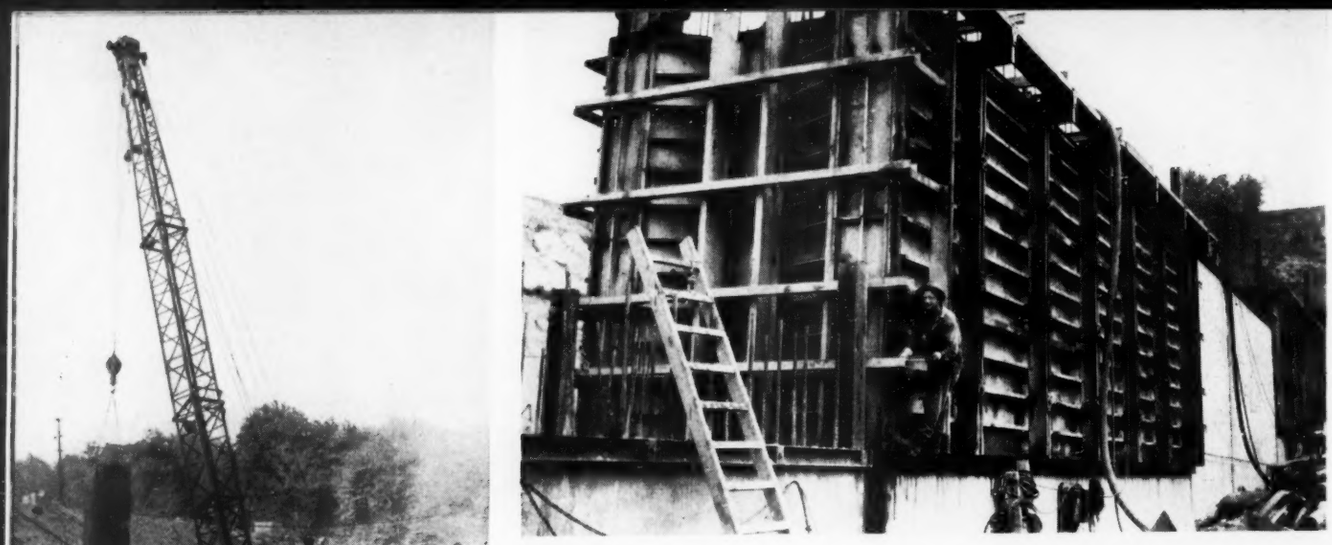
TRENCH IS EXCAVATED 75 ft. deep through gravel and fine sand by carrying scrapers and by shovel and dragline shown here. At center are two exploratory caissons sunk under earlier contract.
Photo by Wm. Standfast, BWS

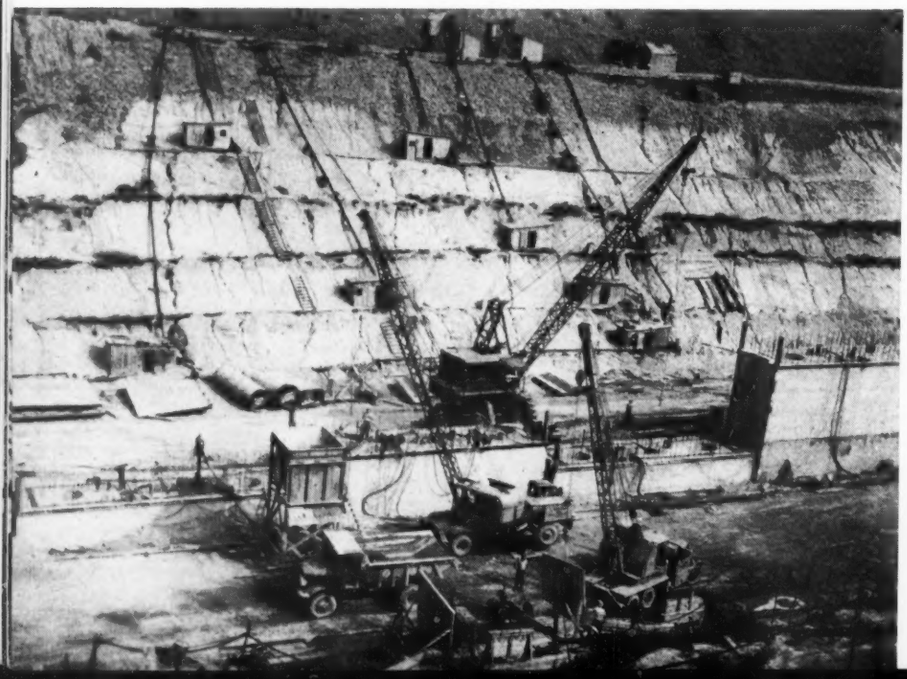


HEAVY STEEL FORMS for 12x45 ft. caissons rest on sill bolted to previous 15½-ft. pour. Caissons, spaced 18 in. from adjoining ones, have recessed ends for later keying into continuous watertight wall.

CYLINDER FORM for one of two 4-ft. muck shafts in caisson is swung to place by big Lima crane. Form is collapsible for stripping.

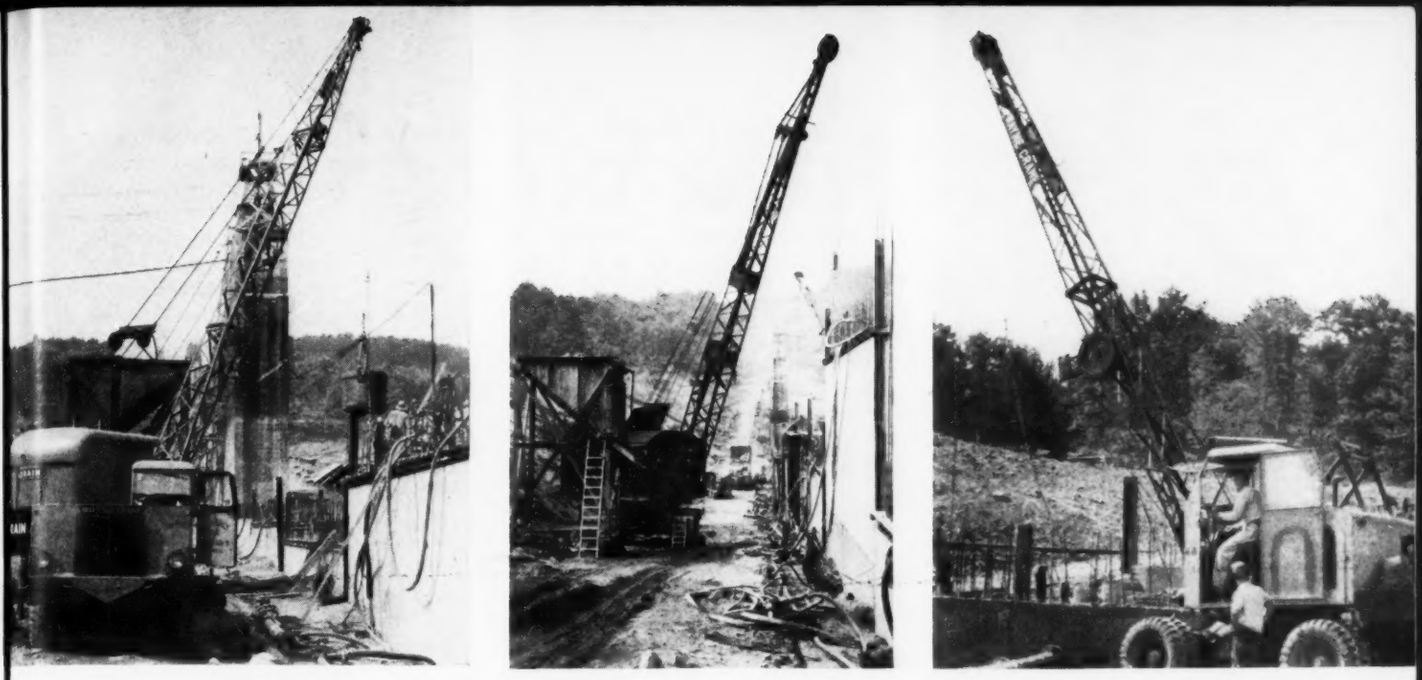
RAIL - MOUNTED Koehring 301 gantry crane operates along line of caissons, handles forms and concrete. Note combination concrete hopper and funnel unit in foreground, complete with scaffolds and floodlights for illuminating both hopper and pour.

FIVE LINES OF WELLPOINTS on upstream side (below) and two lines on near side plus 25 individual pumps keep cut dry, allow caisson sinking without putting on air.



TO PREVENT CLOGGING of wellpoints jetted in fine air-blown sand, screens and risers (below) were packed with gravel. Subsequent trench excavation uncovered those shown here.

Photo by Wm. Standfast, BWS



OLD AND NEW CRANES, whose operators get signals by buzzer from caisson work chambers, load out muck. Ancient Bucyrus 50B (center) is still making money for contractor, as are modern Lorain truck crane and handy Wayne rig. Note truck-loading hopper that is skid-mounted for quick moves.

lying material—a fine airblown sand with some clay—lines of well-points were carried down the side slopes to keep the ditch dry.

From the bottom of the deep trench across the valley floor, 19 caissons are being sunk to rock as a base for the central portion of the cutoff wall. Caissons are 12x45-ft. reinforced concrete boxes up to 100 ft. deep, longitudinally spaced 18 in. for sinking. When the caissons are landed, the space between keyed ends of the units is excavated and filled with concrete to tie the boxes into a continuous wall.

The caissons, with armored cutting edges, are poured in 15½-ft. lifts in Blaw-Knox steel forms. Transit-mixed concrete is delivered from a batch plant at the site and is placed by crane and bucket, although early in the job Healy mixed in two highway pavers on the downstream bank and pumped concrete directly to the forms.

Caissons are sunk by controlled excavation within an 8-ft. high working chamber, access to which is through two 4-ft. muck shafts and a 6-ft. manshaft. In an average day two boxes are each lowered 10 ft. The ground is a mixture of sand and gravel with 20 percent clay, that becomes increasingly dense with depth. Earth excavation within the caissons totals 27,000 cu.yd. and is hand-loaded into muck buckets, and hoisted by

HOISTS ATOP CAISSON handle excavation from between adjacent boxes. Ingersoll-Rand utility air hoists are frame-mounted for easy moving.

ON LEFT BANK, (below) cutoff trench is excavated by Northwest dragline loading into Euclid truck. Blasted rock from trench up slope was pulled out by cable scraper with tail block fastened to frame at top.

DWARFED BY HIGH WALL, drillers cut trench through rock on right bank. Wagon drill puts down inclined grout hole.

cranes alongside for truck disposal. Large boulders encountered are drilled or mudcapped and shot for removal.

All mining is in free air—with water kept down by five lines of wellpoints on the upstream side of the cutoff trench and two on the downstream, and by at least one sump pump in each caisson. At the present stage their combined discharge is 1,600 g.p.m.

When the caissons are landed on rock, as deep as 90 ft. below cutoff trench, they are underpinned by steel posts or concrete walls while the rock surface is trimmed up to solid material. The space between adjacent caissons is mined from on top, and timber poling plates are carried down with the excavation. Small air hoists in frames on top of the caissons handle buckets for muck removal.

After rock excavation, cleaning and necessary grouting beneath the line of caissons, the under trench and working chambers and lower 5 ft. of man and muck shafts are concreted, and the upper portions of the shafts filled with selected compacted earth. Between caissons, concrete is poured to the top as a solid key and plug.

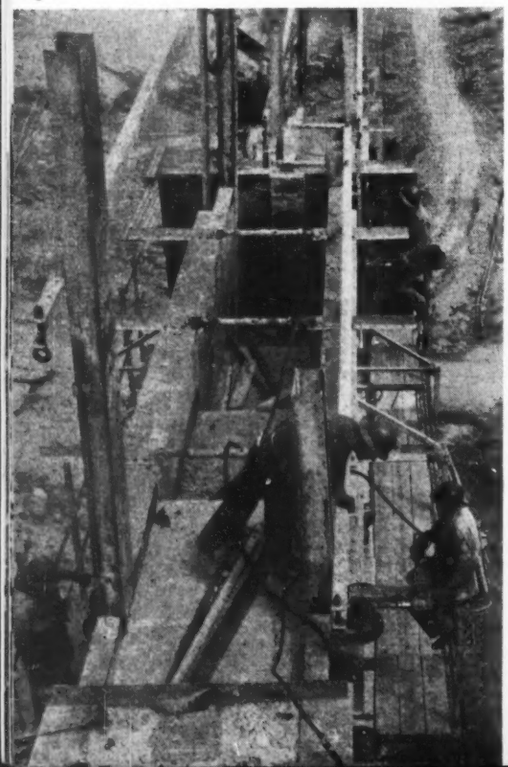
Self-Raising Forms on Walls

Above the caissons and up both abutment slopes the cutoff wall is solid unreinforced concrete 8 ft. thick, tapering to 4 ft. in the top 60 ft. of wall. In the central part of the dam, the wall goes up to El. 1,300, about 95 ft. above lowest top of caisson and 160 ft. below crest. It extends up the left and right banks to El. 1,440 and is 60 to 75 ft. high, with top roughly paralleling the underlying rock into which it is notched.

The wall is poured in 46-ft. lengths in clever Blaw-Knox self-raising forms that lift themselves by their bootstraps as the wall goes up in 6-ft. 8-in. lifts. As shown in accompanying photographs, the forms consist of braced sheet steel panels between long end columns on which they move vertically, and to which they are clamped tight with sliding wedges when in place for pouring. A hand winch for alternately raising columns and panel is permanently fastened at each end of each form. Columns and panels are held in position for a pour by bolts through inserts in the previous lift and by turnbuckle ties across the top.

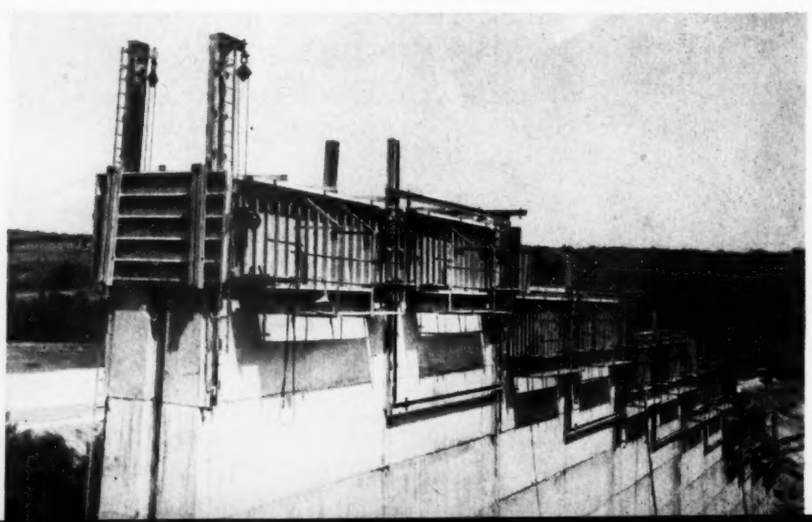
The form is raised for the next pour after the concrete has set up. First the columns are unbolted, freed from the panels and raised by cables hooked to column bases and running to the winches. When the columns are bolted in their new position, the winch cables are shifted to brackets or a brace beam at column tops. The panel is unbolted from the previous pour and the winches slide it smoothly upward into place for the next lift of wall.

The S. A. Healy Co., Chicago, is putting in the cutoff trench and wall at Neversink Dam for the Board of Water Supply of the City of New York, of which Roger Armstrong is chief engineer. For the Board, John Moran is section engineer and Max Freund, division engineer in charge. Nels Carr is superintendent for Healy, and R. B. Strang is engineer. The Catskill Mountains around Neversink are a beautiful vacation country and Steve Healy, president; Lou Salmon, chief engineer; and Dick Hill, eastern vice-president of the firm, are giving the job their personal attention.



← AIR REAMERS operate winches to raise forms. Left columns are at new elevation, right ones are on way up. When columns are raised, cables from winches will be rehooked to column top to lift panels.

FORMS FOR UPPER WALL (below) are self-raising, with columns and panels alternately raised by winches at form ends. Each 46-ft. pour is kept one 6-ft. 8-in. lift above next.



Shop-Fabricated Forms Build Bridge Piers

FABRICATED FORM SECTIONS are loaded by stiffleg derrick into trucks on either side of the construction platform.

BY EMPLOYING nearly the same degree of precision found in a first-class cabinet shop, plus an orderly production and delivery schedule that would do justice to any small fabricating plant, big dividends were paid in labor and time saved in the shop-fabrication of 400 M. ft. of timber forms for several large concrete bridge substructures on the Corps of Engineers Conemaugh Dam project near Pittsburgh, Pa. Hunkin-Conkey Construction Co., Cleveland, Ohio, and Shofner, Gordon & Hinman, Los Angeles, joint-venturers, are contractors for the bridge substructure work which is part of a 16-mi. Pennsylvania Railroad relocation being built for the Corps of Engineers under Col. W. E. Lorence, Pittsburgh District Engineer. Their contract also covers the grading.

Multiple Use of Forms—Design of the substructures for the six major bridges on the project invited multiple use of substantially - fabricated forms. The abutments, which ranged up to 85 ft. in height, are of the three-column spill-through type on a continuous footing. Piers, the tallest of which is 107 ft., are two-column above low water line. Below this point the piers are reinforced gravity type, sloping in both directions down to a single footing. Substructures for the six major bridges totaled 18 large piers and 12 abutments. In addition, the project includes three single-span underpasses and nine miscellaneous drainage structures.

Well Equipped Carpenter Shop

Because of the large quantity of concrete to be formed (39,500 cu. yd., exclusive of footings) and the extensive reuse of the forms, F. C. Shons, superintendent of bridge construction, and Ed Steif, carpenter-shop foreman, spared no effort in the assembly line production and precision fabrication of all forms. They first constructed an 80x40-ft. carpenter shop with table saws, band saws, drill presses, etc., spotted along the exterior walls to give a maximum clear working area for laying out and fabricating the individual form sections. Throughout the bridge construc-

(*Continued on page 172*)

POWER SAWS AND DRILLS (below), spotted adjacent to walls of carpenter shop, leave ample room for fabricating sections of bridge substructure forms.

Fig. 1 . . . SLOPED FOUNDATION for Navy rocket launcher is here shown after overburden had been removed. Pneumatic drill crews had to be tied with lifelines to top of hill while drilling through fractured rock.

SEAMY ROCK GROUTED FOR ROCKET BASE

Data and photos by Compressed Air and Gas Institute through courtesy of Naval Ordnance Test Station, Inyokern, Calif.

DIAMOND CORE DRILLING and grouting of seamy rock under important structures is a conventional way of solidifying a foundation. Compressed air is used to force the plastic grout into small seams and crevices far below the surface. While the use of compressed air for this purpose is not new, the job account given below represents improved techniques that provided the U. S. Navy a satisfactory foundation under a special, inclined, rocket launcher rig.

The launcher was built on a hillside and extended downward into a lake, (*Fig. 1*). Because of fluctuations in the water level the possibility existed of building up hydrostatic pressure within the cracked rock foundation which might result in slides of this unstable material. Even above the high-water mark the rock was fractured and laminated to the extent

that in an untreated condition it could not carry the loads that would be superimposed. Core drilling and grouting, using compressed air, was selected as the cheapest solution for treating the foundation. The rock was made up of banded gneiss consisting of alternate lenses of quartz and feldspar interbedded in biotite mica with a dip of approximately 40 deg. About 8 ft. of loose rock and overburden was removed by a dragline and by hand to get down to the foundation grade.

Diamond Drills Cut Grout Holes

Drilling for grout holes was done with diamond drills, operated by compressed air (*Fig. 2*). The machine is a four-speed rotary screw type and used the manufacturer's standard core bits drilling 1 9/16-in. dia. grout holes. To obtain cores for inspection, a 1945 model, hydraulic feed, straightline machine powered by a 22-hp. gasoline engine was used. Bortz bits used with this drill produced cores $2^1/_8$ in. in diameter. Drilling and grouting of the lower part of the launcher foundation required vertical holes approximately 200 ft. deep extending below the basin of the lake. Above high water level the drill holes were about 70 ft. deep.

Grouting equipment consisted of two 150-gal. mixing tanks equipped with an air-driven motor for continuous, mechanical agitation. Water for the several consistencies of grout that were used was measured by a water meter. An air-driven duplex reciprocating pump, 6x4 in. by 6 in., was used for the actual grouting, (*Fig. 3*). Pumping pressures approached 1 psi. per ft. of depth of hole, beginning with 25 psi. for the first grouting and reaching a maximum of 150 psi. for the deepest holes. Grout was made up, (*Fig. 4*), of a mixture of Portland cement and water to which was sometimes added calcium chloride amounting to 2 percent of the cement weight. This admixture was used when it appeared desirable to accelerate hardening. There was some loss of grout through surface leaks but in general, the use of calcium chloride and calking with oakum overcame this difficulty. The water-cement ratio of the grout varied between 4.0 and 0.75 by volume. The holes were drilled to an initial depth of 15 ft. and thin grout was forced into the hole. The consistency of the grout was made thicker and

Fig. 2 . . . DIAMOND DRILL operators assumed odd positions to work their bits through 200 ft. of laminated rock. Air to run drills was furnished by centrally located compressor and piped to point of use.

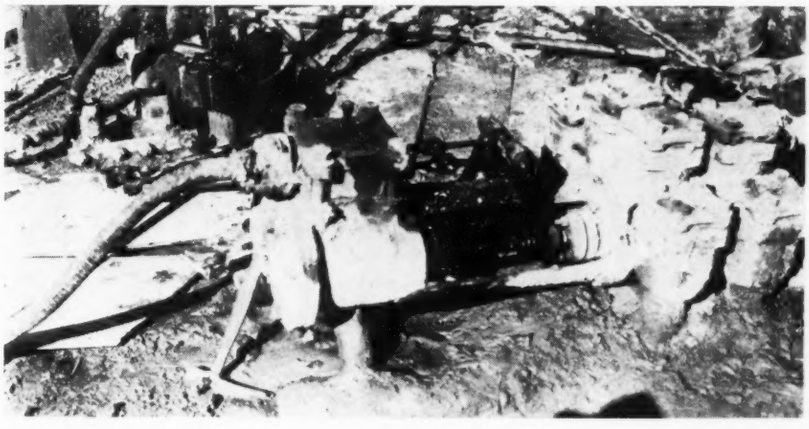


Fig. 3 . . . ALL GROUTING was done with this 6 x 4-in. by 6-in. air-driven duplex reciprocating pump. Through this machine passed 40,835 sacks of cement to grout about 12,000 ft. of holes in seamy rock.

Fig. 4 . . . PORTLAND CEMENT AND WATER were mixed in this tank equipped with mechanical agitator driven by compressed air.

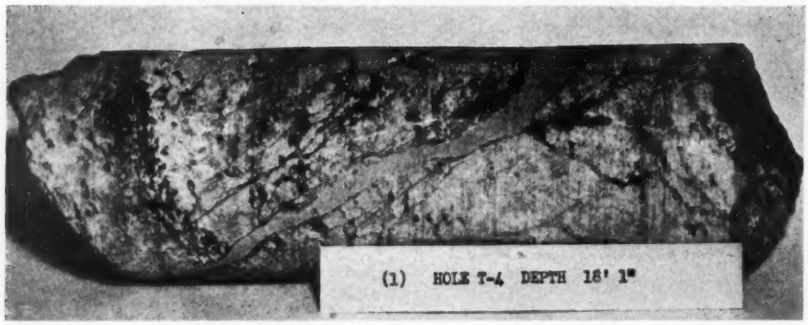


Fig. 5 . . . TYPICAL ROCK CORE taken after grouting shows cement penetration in thin seam. Foundation was so efficiently solidified by grouting using compressed air that dowel holes drilled later would take but little grout.

thicker until completion was indicated by stalling of the equipment. The grout in the hole was then drilled out and drilling continued a few feet beyond the point where the drill water failed to return. Then the grouting procedure was repeated, first using thin, soupy material followed by a gradually increased, richer mix. Experience proved that by far the greatest amount of grout was used in the first 15 ft. of depth of each hole. The deeper the hole the less grout was required.

Each grout hole was equipped with a 2-in. pipe about 4 ft. long extending into bedrock and sealed. About 6 in. of this pipe was above the surface to form a connection for the grout hose.

To check the efficacy of the grouting program, core holes were drilled in questionable areas. The recovered cores, (*Fig. 5*), clearly showed penetration of cement grout in all clean rock seams. When drill water was lost during boring of some of these inspection holes, grouting was done in the same manner as described above. In no case was the consumption of grout excessive in the few inspection holes requiring this treatment.

The highly fractured and faulted part of the hillside above water showed surface cracks ranging from 2 ft. wide to a fraction of an inch wide. These cracks were only discovered after a thorough cleaning by compressed air and water which washed the dirt from them. Holes were drilled at an angle of 20 deg. to intersect the large fissures at some depth and grout was placed as before described. When conditions permitted such procedure, the large cracks were cleaned out to a depth of 4 ft. and heavy grout placed therein by hand methods.

The entire job of consolidating this fractured rock foundation took approximately 6 months. Work was made difficult because of the side-hill slope of of 45 deg. and the surface cracks requiring diagonally drilled holes and special attention. About 12,000 ft. of grout hole and 400 ft. of core hole were drilled. The over-all average consumption of cement per ft. of hole amounted to 3.41 sacks for a total of 40,835 sacks. In addition to the cores which showed excellent grout penetration of seams, further evidence of the amount of consolidation effected was given when 68 dowel holes, 10 ft. deep were drilled at a later date. Only four of these dowel holes required any grouting and the amount of cement pumped into each one was negligible.

Data for this article was obtained from a final report prepared by Quinton Engineers, Ltd., of Los Angeles, through the courtesy of Commander Langlois, resident officer-in-charge of construction. Captain H. L. Mathews was the officer-in-charge of construction.

Strongback Handles Long Bridge Beams

FOR PLACING I-BEAMS up to 105 ft. long in a new highway bridge over the Altamaha River in Georgia, Scott Construction Co., Thomasville, Ga., devised a 50-ft. strongback truss that permits handling the beams with a single crane. Holes in each of the lower gusset plates at truss panels allow the beam pickup points to be adjusted according to length of beam.

Pickups are short chains carrying double clamps that grip the top flange of the beam. Clamps are held tight by ¾-in. bolts that just clear top of flange. The strongback is lifted through a two-point suspension cable sling.

Roy Phillips, Scott's general superintendent, built the strongback for $350. Its cost is more than being repaid on this job alone in time saved in erecting the steel. J. Gifford Brock, resident engineer, and Delmas Wheeler, project engineer, are in charge of the bridge for the State Highway Department.

LEGAL ADVENTURES OF TRACTOR CONN

By LESLIE JOBB

By recounting the experiences of Tractor Conn, who symbolizes the average contractor, this series of articles, each based on the decision of an American court and presented in plain, non-legalistic terms, is designed to help construction men avoid costly legal pitfalls.—Editor

The Case of the Stopped Payment

Tractor Conn had given an order for a new line of insulation to an unknown salesman, paid in advance by check, ascertained that he had been victimized, and promptly gave his bank a "stop pay" order. A few days later, the check came in. The paying teller looked up the stop pay orders on file, but looked under the wrong letter, found nothing from Conn and paid the check.

"It's your mistake, and you're bound to credit the amount back to our account," Conn contended.

The teller pointed to a clause in the stop pay order, which stated that, "the said Tractor Conn agrees to hold the bank harmless for said amount and for all expenses and costs incurred by it on account of refusing payment of said check and further agrees not to hold the bank liable on account of payment contrary to this request if same occur through inadvertence or accident."

"How do you get over that?" the teller demanded.

"I don't believe that the courts will permit a bank to protect itself in advance from its own carelessness," Tractor Conn contended. He sued the bank in the Massachusetts courts, and lost, according to the report of the case in 126 Northeastern Reporter, 782.

"It is manifest the words were intended to exonerate the bank from the kind of negligence shown by the record, and we are unable to see anything illegal, or anything opposed to public policy, in an agreement which relieves a bank so circumstanced from the results of the mere inattention, carelessness, shortsightedness, or mistake of its employees," was the reasoning of the court.

The Case of the Disputed Acknowledgment

Tractor Conn was provoked, warlike, and threatened to sue for staggering damages.

"You received our letter stating that we could accept no more orders for delivery of wallboard after June of this year until further notice," the salesman remarked.

"I did, and I sent you an order for July delivery which you acknowledged, so now I demand delivery of my wallboard in July, according to the terms thereof," Conn averred.

"True, we acknowledged your order, but our letter stating that we were accepting no orders except for June delivery was inclosed with our letter of acknowledgment, so our acknowledgment was in no way an acceptance of your order," the salesman pointed out.

"It was to me," Conn announced. "And I get my order or you stand a lawsuit."

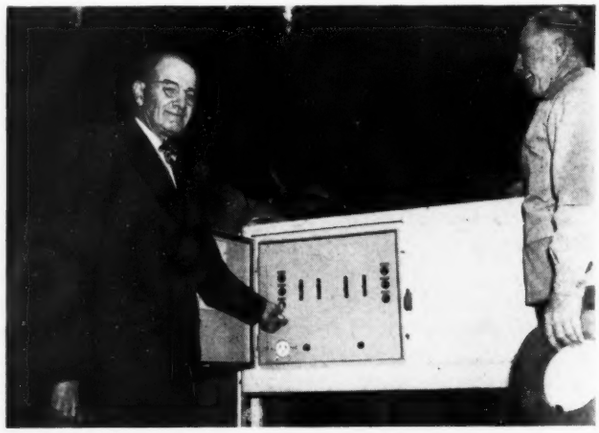
"Which you'll lose," the salesman opined, and guessed correctly, for the Georgia Court of Appeals in a parallel case (reported in 173 S. E. 448) has ruled that such an acknowledgment does not bind the seller.

"The letter acknowledging the receipt of the order and stating that 'we can accept no further business on this wallboard except for June delivery' since it constitutes a variation of the dates of delivery, does not amount to an acceptance of the order," was the reasoning of the Court.

More Legal Adventures of Tractor Conn Next Month

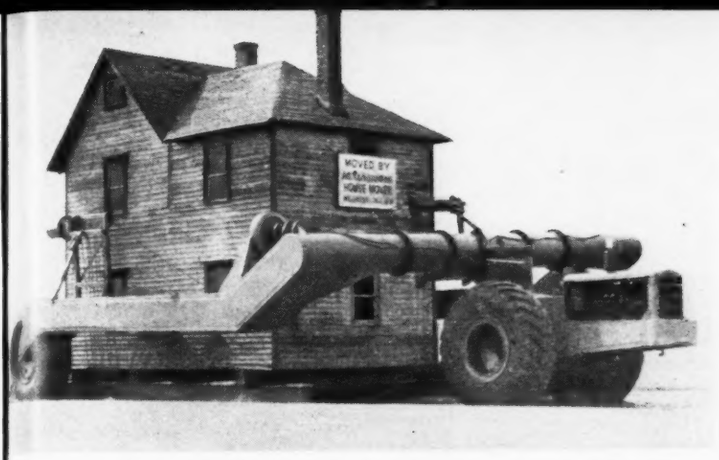
MUTT AND JEFF, largest and smallest trenchers made, work together on Idlewild Airport on Long Island, N. Y. Buckeye 224 cuts trench 24 to 31 ft. deep and 12 ft. wide, while Cleveland 75 cuts 7 in. wide and 3½ ft. deep. Bank sloping device on big Buckeye designed by Thomas Morris, contractor, cuts 15 ft. wide at top of trench and 6 ft. wide at bottom. This machine has baled out up to 4,000 cu. yd. in 10-hr. day on this airport.

DIRECTION-SIGN BRIDGE guides traffic on 8-lane Elizabeth-Newark link of New Jersey Route 25. Oversize letters 15-in. high and direction arrows 4 ft. long outlined in white neon light tubes are mounted on overhead steel beams across roadway. Design was recommended by State Highway Engineer Charles M. Noble.



FIRST DIVERSION of Colorado River water from west to east side of Continental Divide through Alva B. Adams tunnel of U. S. Bureau of Reclamation's Colorado-Big Thompson project was made last summer when GOVERNOR LEE KNOUS of Colorado proudly pushed button that opened gates of 13-mi. bore. Photo, Reclamation Era

ABRAHAM LINCOLN HOUSES in Harlem section of New York City will provide 1,286 low-rent apartments in 14 buildings of structural steel frame with brick walls. H.R.H. Construction Corp. is general contractor and Raymond Concrete Pile Co. placed pile foundations for majority of buildings.



PICK 'EM UP and carry them away is modern method of house-moving practiced by J. W. Hartshorne, Moorestown, N. J., contractor, in clearing buildings from right of way of New Jersey superhighway with brand new housemover designed by R. G. LeTourneau, Inc., Longview, Tex. Tournamover, powered by 214-hp. diesel tractor that also drives generator for electric hoists and steering, simply straddles any building up to 25 ft. wide, picks it up through needle beam under frame and makes off with it. Wide gage of rig permits straddling of foundations so house can be dropped in place at new location.

MAKING WAY for Peace Headquarters at United Nations site in New York City, 100-ft. boom Speedcrane supplied by Gerosa Crane Service Co. demolishes old slaughter house at 46th St. and First Ave. for Wreckers & Excavators, Inc., New York contractor on general demolition work. Brickwork is knocked loose by steel ball on end of crane hoist line, then steel frame members are carefully removed for salvage.

Mal Gurian Photo

CLAIMED TO BE WORLD'S LARGEST TRACTOR, this Allis-Chalmers HD-19, weighing 20 tons and driven by hydraulic torque converter, is playing important role for Mashuda-Griffith Construction Co., of Milwaukee, Wis., in expansion of Billy Mitchell airfield, just outside of Milwaukee. Project involves moving of 250,000 cu. yd. of earth to enlarge field to 1,400 acres and reconstruction of 6,700-ft. runway. Seated in tractor are W. A. ROBERTS, Allis-Chalmers' executive vice-president, and DON CAPE, operator, of Racine, Wis.

EUROPE'S HIGHEST DAM (below), now under construction in Non Valley, Trento, Italy, will back up 138,000 acre-ft. of water. Begun in 1939, this 460-ft. structure will cost an estimated $14,285,000. Hydro-electric plants are slated to produce 250,000,000 kwh.

Wide World Photo

DIVERTED FROM NORMAL JOB of laying asphaltic concrete, Barber-Greene paver pushes along at 10 ft. per min. spreading blast furnace slag for macadam base on Maryland road.

Paver Spreads Slag for Macadam Base

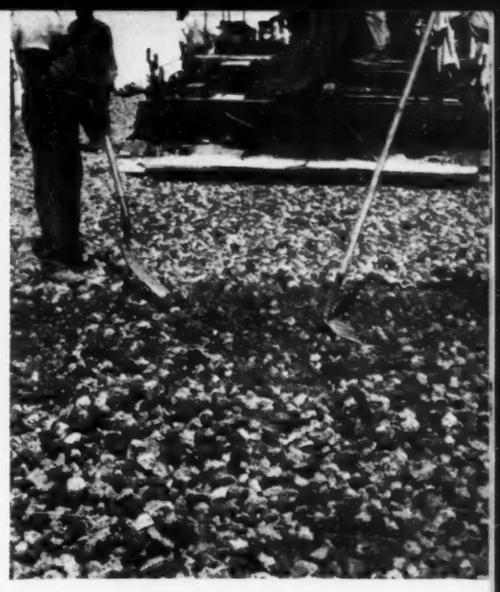
← DIRECTING ROAD JOB are: H. G. WALKER, field engineer for Whitman, Requardt - Greiner Co. & Associates, consultants; and M. R. BOSLEY, superintendent for contractor, American Paving & Contracting Co., Baltimore.

AN ASPHALT PAVER spreading blast furnace slag for waterbound and penetration macadam is pacing American Paving & Contracting Co.'s operations relocating 4 mi. of Fort Meade Road (Maryland Route 170) around the new Baltimore Friendship Airport site. The rig, a Barber-Greene paving-finishing machine, travels better than 10 ft. per min. spreading 12-ft. widths of 2-in. maximum size crushed slag in 4½-in. layers for final compaction to 4-in. courses.

The relocated road has a 24-ft. paved width flanked by 10-ft. shoulders. Total pavement depth is 13 in., consisting of a 2-in. course of screenings, 4 in. of waterbound macadam, 4 in. of penetration macadam and a 3-in. surfacing of plant-mixed asphaltic concrete in

← FIRST PAVEMENT COURSE is 2-in. layer of fine slag screenings. Here backing Caterpillar No. 12 grader levels truck-dumped piles of screenings before blading material to grade.

WITH BLEEDERS OPENED to cover 12-ft. width, paver spreads 2-in. size slag for 4-in. waterbound macadam second course. Similar material for next 4-in. layer of penetration macadam is also distributed by this Barber-Greene tamping finisher.



PAVER-SPREAD SLAG needs less trimming, filling or raking than does similar material distributed by truck-drawn spreader box, according to contractor. Note smooth surface in wake of paver.

two 1½-in. layers. Total paved area is 56,500 sq.yd., and since all coarse aggregate for the two macadam layers is spread by the paver, as are the two plant-mix layers, the machine has plenty of work to do.

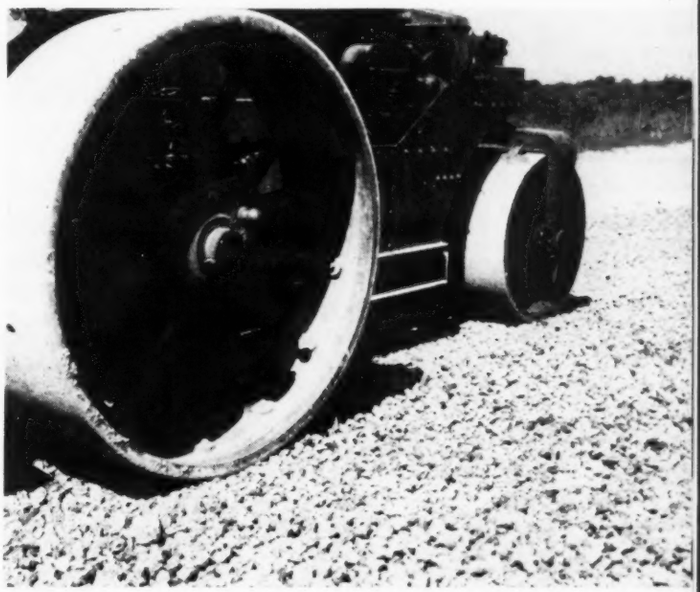
First step in pavement construction is to spread a 2-in. layer of crushed limestone and marble screenings (¼-in. to dust) on the compacted subgrade, which is predominantly a silty sand. Watered and rolled into a solid blanket, the screenings are covered with a 4-in. course of 2-in. size blast furnace slag spread in 12-ft. widths by the Barber-Greene paver.

Paver Unaltered

No changes were necessary to adapt the paver to slag spreading and the rig operates in third speed at about 10 ft. per min. Despite the fact that the material is dry and unlubricated, the machine has no difficulty handling it, although the strike-off screed and the apron feed from the receiving hopper show more than normal wear.

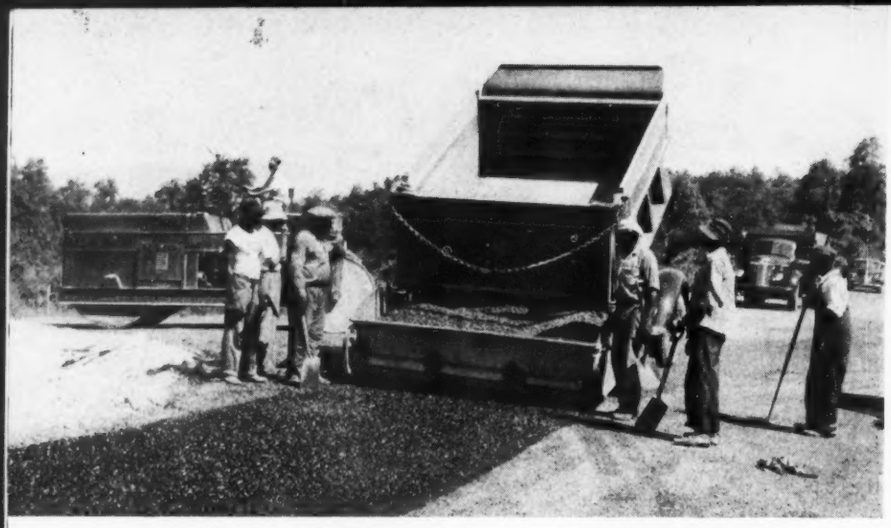
In addition to spreading the aggregate, the paver gives it an initial compaction as it passes. After further consolidation by three-wheel roller, the layer is bound with slag dust washed into the voids. Mechanical brooms sweep the excess from the surface when dry to complete the waterbound macadam course.

On this, the paver spreads an-

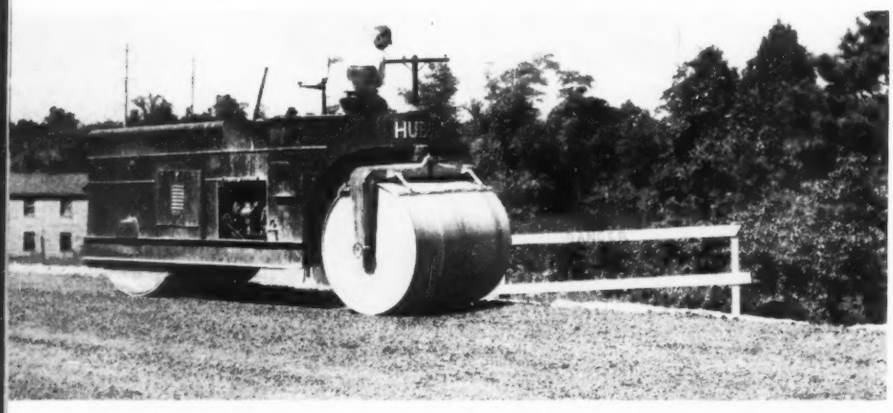


→ ROLLER COMPACTS coarse aggregate before slag dust is washed into voids for waterbound macadam layer. Buffalo-Springfield 10-ton roller follows closely behind paver spreading coarse slag.

THIRD COURSE is 4-in. layer of penetration macadam (below). Littleford distributor penetrates with RC-5 at 1 1/3 gal. per sq. yd.—more than usual quantity because of high absorbency of slag aggregate.



BACKING DUMP TRUCK pushes Buckeye spreader distributing ¾-in. slag chips to key penetrated coarse aggregate.



KEYED SURFACE of penetration macadam course is compacted with Huber 2-wheel tandem roller. Another shot of asphalt will follow before 3 in. of plant-mix bituminous concrete is spread to complete pavement.

other similar layer of No. 2 slag. When rolled, the aggregate is penetrated in three 8-ft. lanes with RC-5 asphalt applied at the rate of 1 1/3 gal. per sq.yd. The surface is keyed with ¾-in. slag chips spread at 10 to 30 lb. per sq.yd. These are rolled tight and given a 1/3-gal. shot of RC-5 which is blotted with ½-in. chips. After brooming and rolling, two 1½-in. surfacing courses of hot-mixed, hot-laid bituminous concrete are spread with the Barber-Greene machine to finish the pavement.

Job Personnel

American Paving and Contracting Co., Baltimore, is doing the work as part of their $304,000 relocation job for the Baltimore City Department of Aviation, whose new airport necessitated the route change. Major Gen. Cecil R. Moore (retired) is director of the Department. For the consulting engineers, Whitman, Requardt-Greiner Co. & Associates, of Baltimore, B. Everett Beavin is project engineer, Graham R. Hevell is resident, and H. G. Walker is field engineer. M. R. Bosley is superintendent in charge for American Paving & Contracting Co.

Portable Power Moves Electric Shovels

AFTER HAULING sections of two new P&H Model 1400 electric shovels 27 mi. from railroad sidings over country road detours to avoid weak bridges, and assembling and erecting them at a borrow pit for Merriman Dam at Lackawack, N. Y., S. A. Healy Co. decided to move the rigs to another pit 3 mi. away. No electric power was available for the move, but rather than dismantle and reassemble the shovels, the contractor rigged up a neat traveling generating plant to furnish power to walk the machines to the new location.

Healy had one 62½-kw. General Motors diesel generating plant on hand, but needed more capacity for the job. A similar unit was located in war surplus, and the two generators, mounted side by side on a long trailer, were hooked up in parallel to a transformer also riding the trailer. The combined output of 125 kw. was just enough to move the shovels, one at a time, up the hills encountered.

Power from the transformer was delivered directly to the independent propelling motor of the shovel. The dipper was blocked up and the hoist motor cut out. The generating plant carried 1,000 ft. of tail cable. Moving procedure was to park the plant about 900 ft. ahead of the shovel, establish a good ground connection for safety, then move the shovel ahead 1,800 ft. The first shovel traveled the 3 mi. in 8 hr., the second in 7 hr.

Photo Courtesy Harnischfeger Corp.

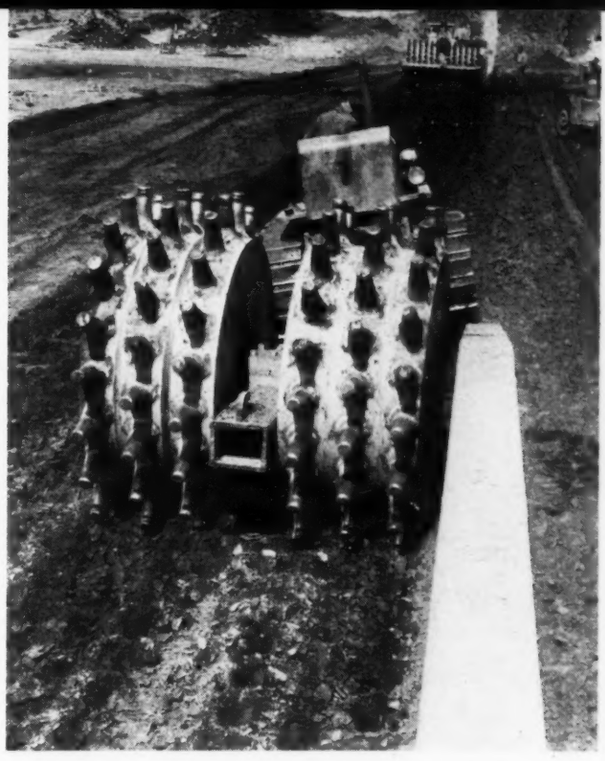
Special Roller Tamps Close to Walls

U. S. Bureau of Reclamation Photos

TO ELIMINATE expensive mechanical compaction of earthwork by hand tools alongside cutoff walls and other structures, U. S. Bureau of Reclamation engineers at Anderson Ranch Dam in Idaho developed a special sheepsfoot roller with straight drum ends without sideframes. An old roller, 5 ft. in width, was cut in half to form two 2½-ft. wide drums. A 5-in. chrome steel axle was put through the drums, fastened to a 12-ft. box tongue made up of 1-in. steel plate, which separates the drums.

The axle, fitted with bronze bushings for each drum, was threaded at each end to take a 4-in. castellated nut. Each nut, recessed into the drum to leave a flush outside face, rides against a floating steel washer, which, in turn, bears against a bronze washer keyed to the axle and resting against the bronze bushing. The face of the drum is sealed with a steel plate containing a grease fitting. A transverse frame welded to the tongue just in front of the drums carries cleaning bars.

The outside row of teeth on each drum was extended 1 in. and flared outward to place the tamping feet in line with edge of drum. Studies showed this extra expenditure was not warranted by results. An A-C HD 14 tractor pulls the roller. As the tractor is about the same width as the two drums, the rig is able to work close to walls without changing the hitch. The roller is ballasted with scrap iron.

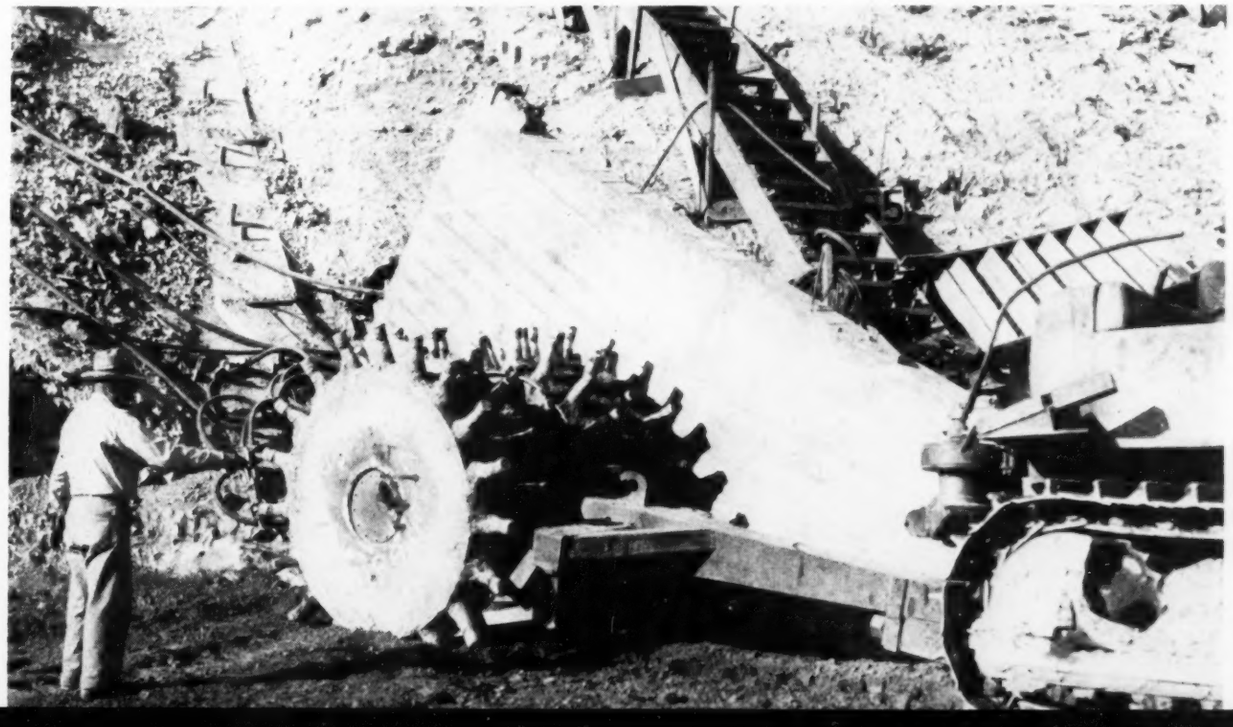


FRAMELESS ROLLER works close to cutoff wall on South Coulee Dam. Outside feet on this unit are in normal position, as tests showed no advantage was gained by flaring them outward.

Success of the roller at Anderson Ranch has led to its adoption on the Bureau's South Coulee Dam on the Grand Coulee project. On the rig made up for this job the outside row of teeth was not flared outward, but left in normal position.

E. D. Henry, chief earthwork inspector, and U. V. Egstorm, field engineer at Anderson Ranch Dam for U.S.B.R., were responsible for the original development.

SPECIAL SHEEPSFOOT ROLLER (below), with straight drum ends free of side frame, compacts fill close to wall at Anderson Ranch Dam. Outside tamping feet on first unit were extended and flared outward flush with drum end.

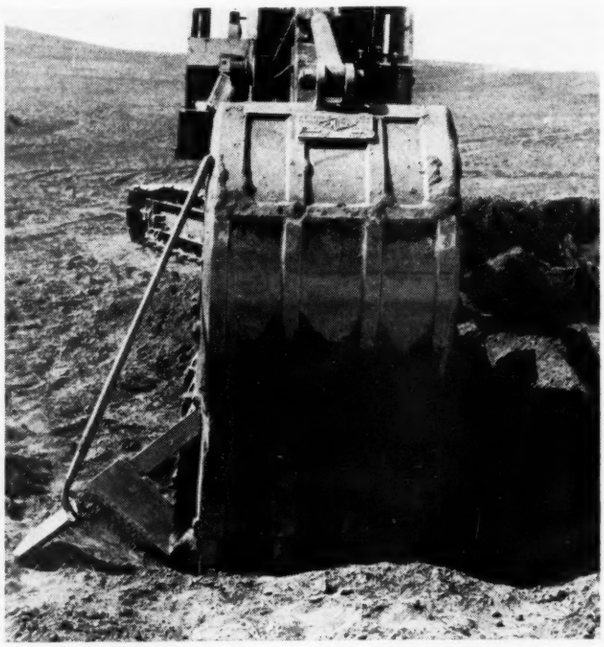


HOW ...they did it

CANNON that shoots holes in steel rail is used by Ford Motor Co. railroad workers in Rouge plant at Dearborn, Mich. This 45-lb. explo ive power-rail punch, made by Mine Safety Appliance Co., is loaded like an old smooth bore rifle. Cartridge is placed behind punch of desired diameter, firing pin is attached and cannon fired by tap with light hammer. Explosive force drives punch through steel rail, shooting holes up to 1½ in. in ¾-in. steel.

Ford News Bureau Photo

DECORATIVE GROOVES on concrete surface of pier for bridge across Chesapeake & Delaware Ship Canal at Chesapeake, Md., were formed by rubber strips, made by U.S. Rubber Co. Attached to forms by waterproof adhesive, strips can be easily removed without chipping mortar and can be re-used many times.

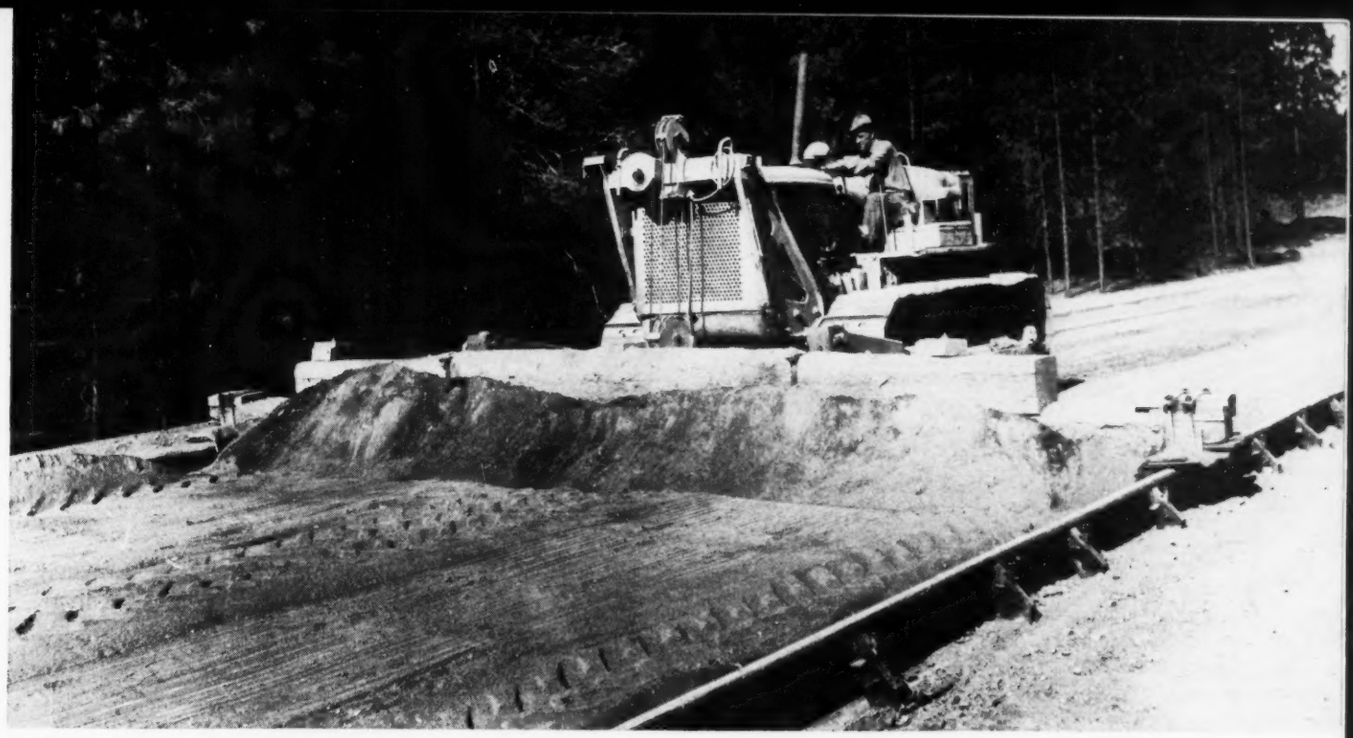


SIDE ANGLE BRACKETS attached to ¾-cu. yd. bucket of Lima hoe shovel slope inside ditchbanks on Deschutes Project in central Oregon. Device was perfected by Adler Construction Co., of Seattle, Wash., contractor on job.

Bureau of Reclamation Photo

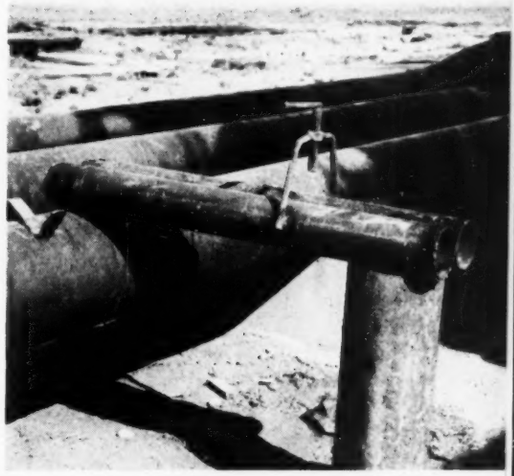
TO HANDLE LARGE PIPE (below) on their $773,000 contract for discharge pipeline and outlet structures at 18 pumping plants on Roza Division of U.S. Bureau of Reclamation's Yakima Irrigation Project, Scheumann & Johnson, Seattle, coupled a semi-trailer to converted Army wrecker to make efficient self-unloading delivery rig. Here crane strings 33-in. steel discharge pipe at Pump Area No. 1.

U.S.B.R. Photo by Keeler

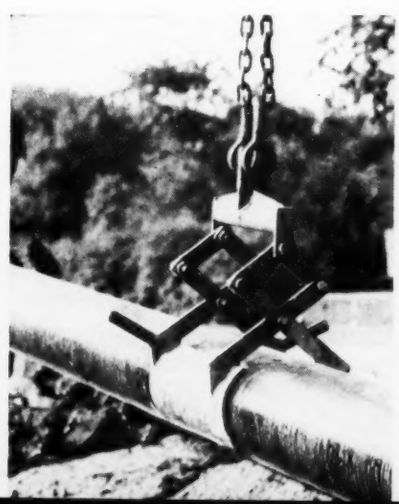


FINE-GRADING BLADE that fits between forms of highway was rig ged up by Sather & Sons, of Spokane, Wash., for fine grading 3.8 mi. of U.S. 10 in Idaho. Timber blade 24 ft. long is attached to bulldoz er frame of Caterpillar diesel D7 tractor.

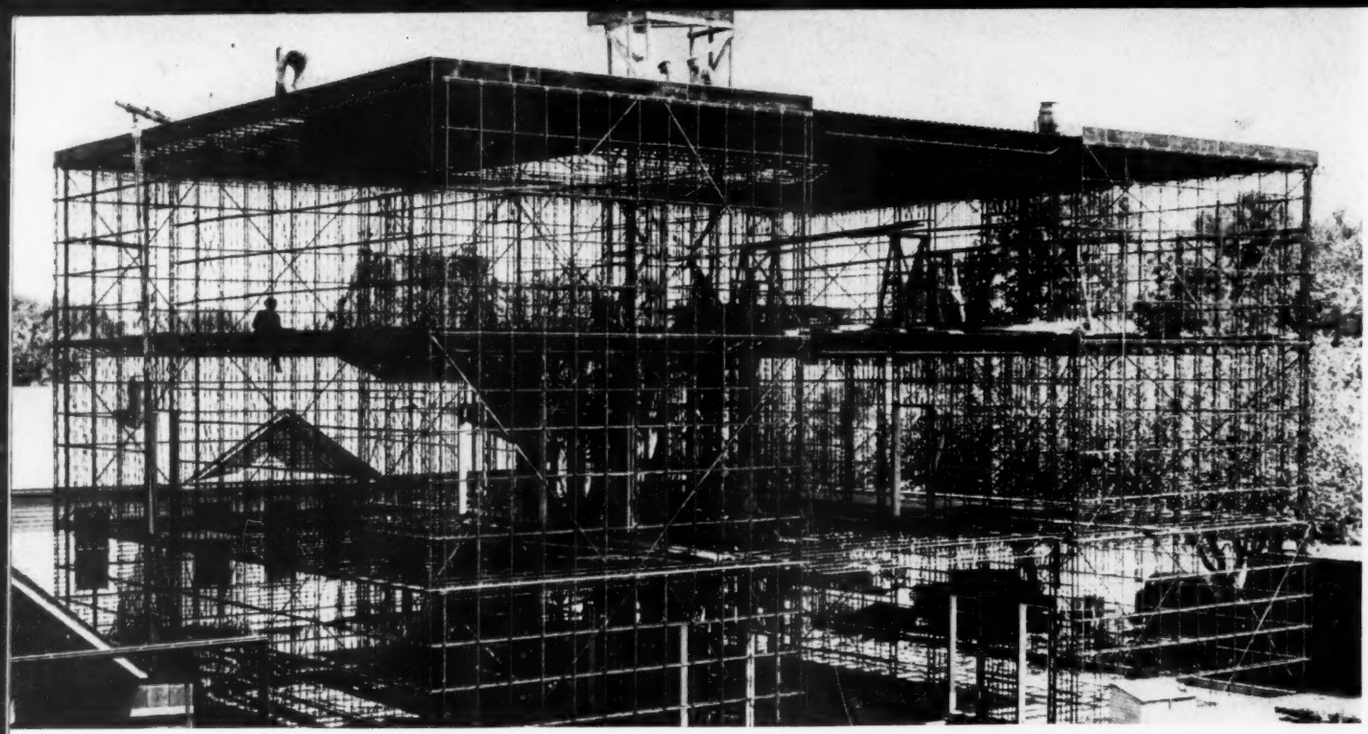
COUPLING PULLER of friction type helps assemble Johns-Manville Simplex coupling on asbestos-cement Transite pipe installed by Oil Operators, Inc., of Long Beach, Calif., to dispose of oil field waste.



→ IMPROVISED VISE for holding short sections of pipe so they can be beveled with torch or joined at angle while in position allowing most convenient work height was devised by welder on construction of compressor station for El Paso Natural Gas Co. at Fullerton, Tex. Vise is formed from two short sections of light 3-in. pipe, tack-welded together to form trough, with one end tack-welded to 2-ft. section of 8-in. pipe which acts as outer leg of support. A ¾-in. nut is welded between two short sections of rod, which are bent and welded to sides of pipes. Threaded section of ¾-in. bolt, with short rod welded on at right angles to form handle, completes unit. Pipe nipples up to 6-in. dia. can be clamped to vise and held rigidly enough to withstand overturning effort of mitre weld of same size pipe. Vise can be moved from point to point along job.—From Elton Sterrett.



← → HOME-MADE CRANE ATTACHMENT on Scoopmobile and specially designed pipe tongs facilitate handling of 7 mi. of cast-iron pipe for extension of water supply system of Michigan State College. Pipe from U.S. Pipe & Foundry Co. was installed by Van Orden & Van Ess, contractors.



LIGHT STEEL FRAME for 3-story Houston building was erected in 18 working days with pre-assembled panels made up of expanded beam studs and welded in place.

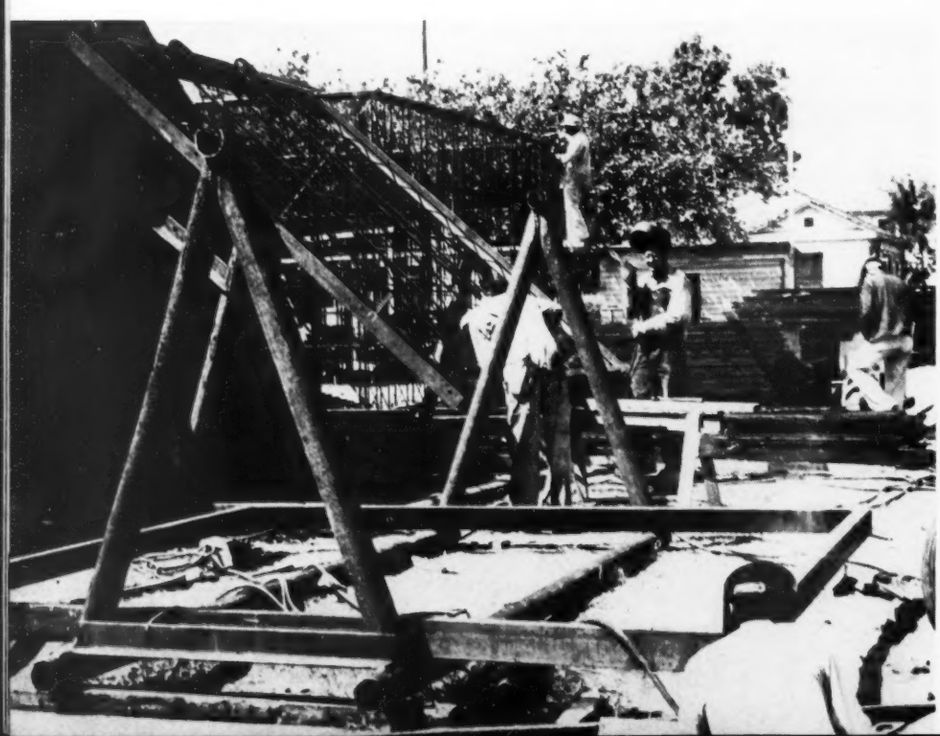
Pre-Welded Stud Panels

BY PRE-ASSEMBLING open-web steel studs into wall panels 10 ft. long, then welding the sections together to make a light-load structural steel framework, Matthews Construction Co., Houston, Tex., erected a 50x64-ft. 3-story office building frame at the plant of the W-K-M Co. in Houston in only 1,440 man-hours, and at a cost of less than $11,500.

Key to the fast and economical construction was the pre-assembly of wall panels. Studs were Bethlehem 4- and 6-in. open-web expanded steel sections delivered in long lengths. On the job, these were cut to fit ceiling heights by a friction saw on a table that was equipped with stops set to give exact length and square ends.

The Bethlehem studs are lightweight, lattice-web, one-piece members, with a minimum steel thickness of ⅛ in. They are made from special rolled sections by a hot-slitting, rolling and expanding process. The studs come in 3-, 4- and 6-in. widths with a 1¼-in. flange, and cut to specified lengths. When braced laterally, the studs are designed to support a safe load of at least 6,000 lb. With the studs as vertical supports, and a girt of lightweight steel channel at upper floor levels for lateral tie around, and steel joists as floor members, the building has a fabricated all-steel frame.

The studs were assembled on 20-in. centers into 10-ft. panels in two simple trunnion jigs that flopped over for all-downhand



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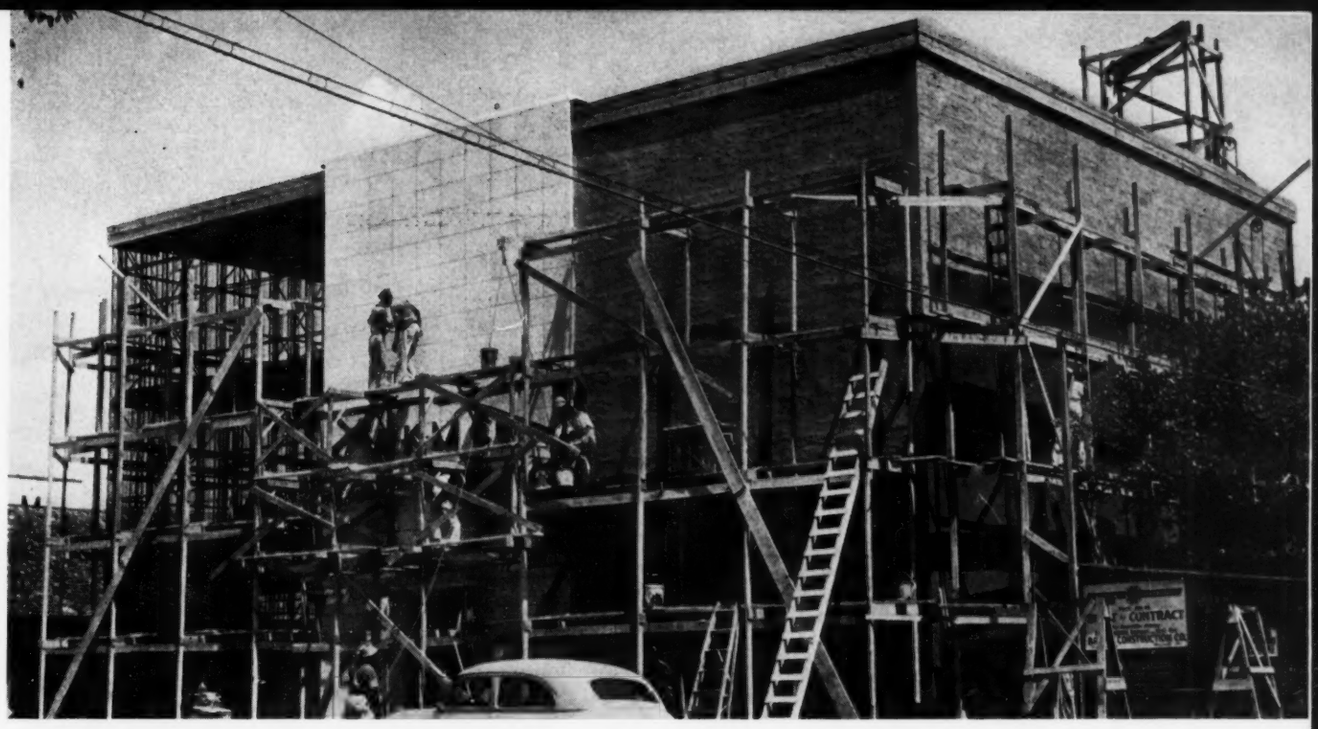
ALL-WELDED PANELS 10 ft. high are pre-assembled in rotating jigs to permit down welding of all connections. Channel girt at top end of panel is held by C-clamp and this end is welded first. Channel girts are placed across both ends of studs for first-story panels only, and just across top for second- and third-story panels.



FINISHED BUILDING will be windowless and fluorescent lighted, with stucco and block exterior walls. Interior will be plastered and veneered. Plumbing, wiring and insulation are easy to install in welded framing.

Cut Cost of Structural Frame

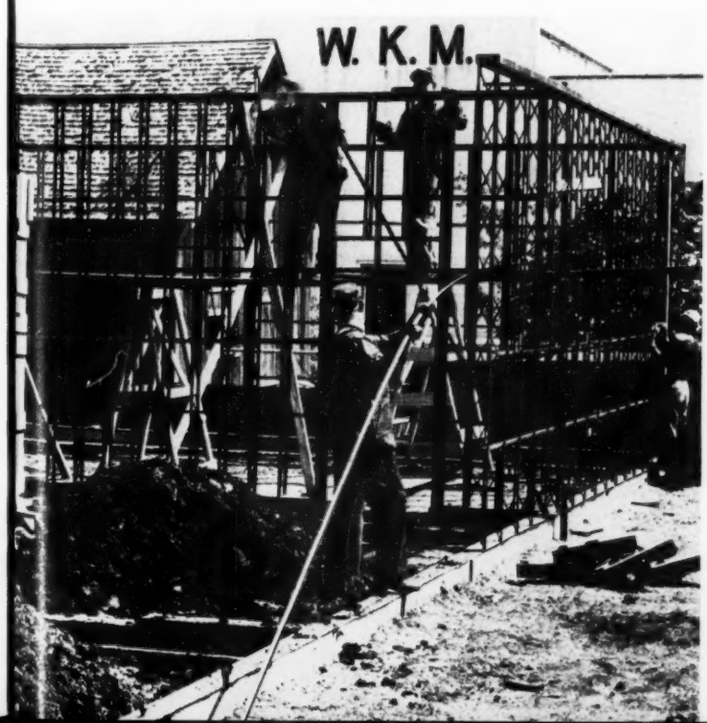
BY RICHARD P. MATTHEWS
Matthews Construction Co.
Houston, Tex.

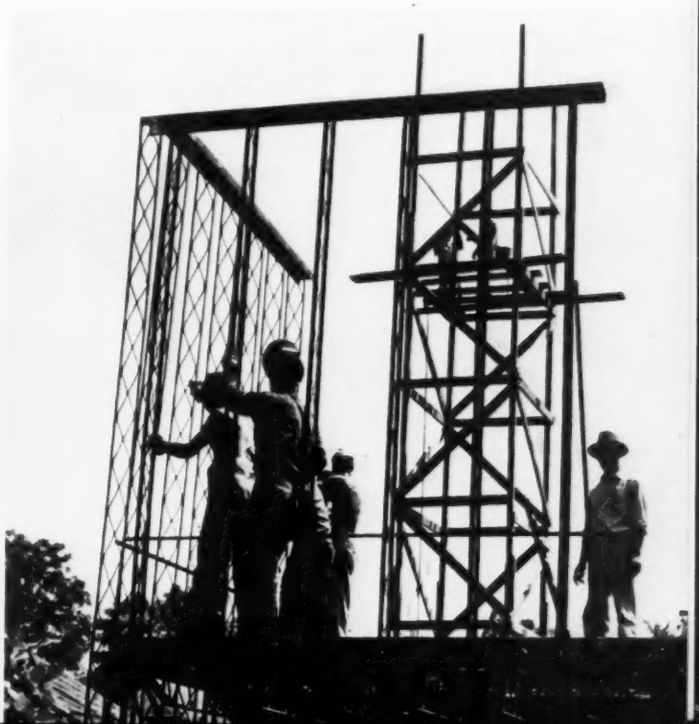
welding. In the jigs, studs of the first-floor panels were welded to a sill plate and to a channel cap or girt; for upper floors the sill was omitted. In addition, openings were framed into the panels, and some horizontal bracing angles were welded. All welding was by Fleetweld No. 5 and No. 7 rods and Lincoln welding machine.

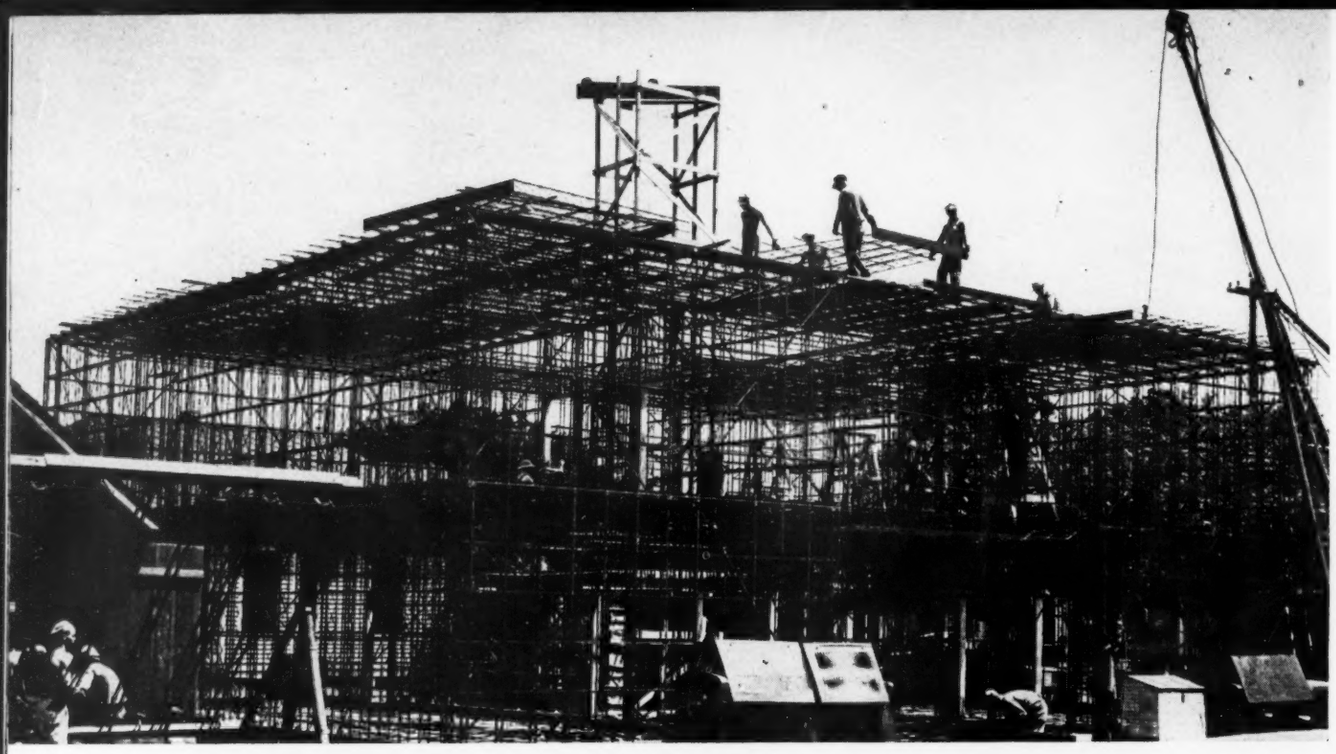
Complete panels were easily handled by two men, and required no scaffolding or special erection equipment. The first-floor sill plates were slipped over anchor bolts in the foundation, and the panels were left unbraced after the nuts were drawn down. When

FIRST STORY PANELS (below) are held by foundation bolts through lower channel girt. Workman in foreground is inserting one of four angles placed in each 10-ft. wall height for additional bracing. Welder is tying two panels together.

START OF SECOND STORY wall erection (below). These panels are fabricated without lower channel girt as studs rest on and are welded to top of upper girt on first floor panels. One horizontal angle brace has been welded in place to stiffen panel for handling.







PANELS WERE HANDLED by hand until third story was reached, then truck-mounted gin pole lifted them to third floor level. Two men easily carry panels and set them up in position in wall. Welding jig is at extreme left.

several panels had been erected, diagonal and horizontal bracing, and joints in sills and girts were welded.

Erection of upper-floor panels was similar, and followed the welding of bar joists in place for the ceiling of the floor below. Since these upper wall frames were without sill plates, they were held vertical while the bottoms of the studs were welded to the girt channels of the panels beneath.

Matthews Construction Co., as subcontractor under Brown Construction Co., Houston, put up the building frame at a cost of less than $0.11 per cu. ft. or about $1.19 per sq. ft. of floor area. This figure includes placing and welding of bar joints, fire escapes, staircase and steel roof decking, as well as furnishing, fabricating and erecting the building frame panels.

Two Rollers on Snatch Blocks Compact Both Banks of Dike

COMPACTION EQUIPMENT TEAM (below) on flood control dike at Holyoke, Mass., consists of Euclid wheeled tractor, Euclid wagon unit as anchor for snatch blocks, and pair of water-ballasted 465-psi. McCoy sheepsfoot rollers. As tractor moves back and forth, tampers roll up and down both slopes.

TO COMPACT THE SIDESLOPES of an earth dike along the Connecticut River in their home town, Daniel O'Connell's Sons, Inc., Holyoke, Mass., rigged a pair of McCoy sheepsfoot rollers that simultaneously tamp both sides of the embankment. Through a simple yet effective hook-up, a Euclid wheeled tractor operating longitudinally on top of the dike pulls both rollers up the slopes and lets them descend by gravity to compact 500 lin. ft. of dike per 10-hr. day.

The embankment, 3,700 ft. long and 16 ft. high with sideslopes of 1 on 2½ and a top width of 10 ft., is part of the O'Connell firm's $2,000,000 flood control project for the Corps of Engineers. Compaction specifications require a minimum of six passes with a sheepsfoot and a final density of 95 percent of maximum.

The compaction procedure is ingenious. On top of the embankment is a Euclid tractor weighted with scrap iron, and ahead of it is

a separate loaded Euclid wagon unit that serves as an anchor for the operation. Cables from the tractor are reeved through snatch blocks on the rear of the wagon and on each roller frame, and are dead-ended on the wagon. The tractor, backing away, pulls both rollers up the slopes in unison, then goes forward to let them roll down to the toes. When one strip of dike is thoroughly tamped, the anchoring Euclid moves ahead one drum width and the operation is repeated.

Dwight McKechnie is in charge of the project for the Army Engineers. For the contractor, Robert Fischer is project engineer, and Richard Ahern, who devised the compacting scheme, is earthmoving superintendent.

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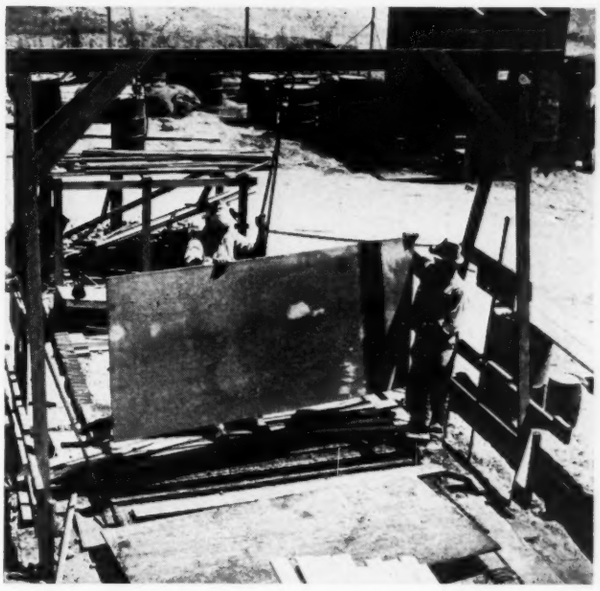
48 Concrete Houses in 48 Days

HOUSE BUILDING in the Los Angeles area is proceeding at a feverish pace, as evidenced by a record of 48 all-concrete small homes poured in 48 days by Herbert Ketell, engineer and contractor, in cooperation with J. E. Haddock, Ltd., Pasadena contractor at their Mayfair development in suburban Chino. The units, designed by architect Hugh Gibbs, are identical except alternate houses are reversed in layout. Thus, the same form system could be used throughout.

Key to the fast schedule was the form system, built up of full-height (single story) plywood panels for both outside and partition walls. Form units were blocked out for all openings and fixtures.

Despite the use of low-grade plywood for the panels, the forms were used an average of 25 times by waterproofing and toughening the wood with an application of Calresin Corp.'s Plastiglaze. A. L. Jensen, superintendent on the project, built a dipping vat on the job and every plywood sheet was dunked in the solution before it was framed into panels. Each panel was bound at the edges with light angle iron to stiffen and protect the sheets. After each use the forms were carefully cleaned and oiled.

A hoist tower was set up to serve each pair of houses, with a 14-S mixer discharging direct into buggies on the tower platform. All concrete, of lightweight aggregate, was wheeled from on top.



PLYWOOD SHEETS are dipped in Plastiglaze prior to fabricating into form panels. Sheets are then bound around edges with light angle iron. This process resulted in re-use of forms 25 times.

FAST POURING SCHEDULE of 48 concrete houses in 48 days was maintained by this concreting outfit (below) in Chino, Cal. Tractor scoop charges mixer, which discharges into buggies on tower platform. Tower serves two adjacent houses that are identical except for reversed layout. All openings are blocked out in form panels.

TAFT-HARTLEY ACT
Frees "Slave" Labor

THE TAFT-HARTLEY ACT is two months old. Its full meaning is yet to be determined by decisions of the National Labor Relations Board and the courts. However, on its face, the Act refutes the attacks made upon it by union leaders as hysterical and fanciful.

Management has had every provocation to reply to these attacks in kind. To the credit of the employers of this country, they have not succumbed to that temptation. They have maintained a temperate attitude toward the new law and the problems it is designed to correct. This approach is right. But it is only an approach.

Union leaders will want to settle for nothing short of *repeal.* Their attack on the Act has made some headway. It may be more effective as time goes on. *Certainly the Taft-Hartley law will be repealed if management just sits tight and lets union leaders continue to confuse their followers.*

Management, therefore, must implement its present temperate attitude with a program of positive action. The Taft-Hartley Act must be made to work not because management wants it, but because it is fair to labor — and management can do things right now to see that the Act works. Management can:

I. Utilize every means at its disposal to acquaint the rank and file of union workers with the truth about the Taft-Hartley Act.

II. Suggest amendments to the Act if experience indicates that amendments are necessary.

III. Use the law as little as possible in settling labor disputes.

IV. Stand firm in its refusal to bargain away the rights accorded by the Act to workers, management, and the public.

An examination of those four *must's* will show why they provide management with its best program of action.

I.

Union members do not know what the Taft-Hartley Act provides.

There is abundant proof of that statement.

While Congress was still trying to write a law that the President would not veto, FACTORY magazine asked workers how they felt about major proposals in the pending House and Senate bills. Overwhelmingly they felt good. They were in favor of almost every individual provision that was finally incorporated into the bill and passed over the President's veto.

The same story emerged from the national opinion poll made by the Opinion Research Corporation of Princeton, N. J. and published by Look magazine after the law was enacted. It showed that union members uniformly favored major provisions of the Act, but were strongly opposed to the Act itself.

This inconsistency is easily explained. Instead of telling their members what the Act does for them, most union leaders have been condemning it as "a slave labor law" because it curtails the leaders' power and recognizes the rights of the union member and the public.

It is not a slave labor law. All of the basic rights accorded to labor by the Wagner Act of 1935 are preserved by the Taft-Hartley law. All of the unfair labor practices that were forbidden by the Wagner Act are still forbidden by the Taft-Hartley Act.

Nothing in the law impairs labor's right to bargain through representatives of its own choosing.

The Wagner Act condemned as an unfair labor practice any effort by employers to coerce employees in the selection of their bargaining representatives. So does the new law.

The Taft-Hartley Act merely recognizes rights of individual employees, of management, and of the public that were ignored by the Wagner Act.

For example, while the Taft-Hartley Act continues the workers' protection from coercion by employers, it also gives them new protection against coercion by unions. The individual worker is freed from the necessity of joining a union to *get* a job. He may still be required to join a union to *keep* his job, but not unless a majority of the workers vote for such a requirement in a government-supervised election.

Some people think the Taft-Hartley Act is weak in protecting the rights of the individual worker. They think that membership in a union should never be made a condition for holding a job. This is true. However, the Act does restore to the individual worker some rights which were blotted out under the Wagner Act, just as it does to management and the public.

A fair examination of the new law's provisions will show that they spring from one dominating purpose: i.e., to re-establish equality before the law.

For example, under the Wagner Act union leaders were free to say whatever they pleased about the employer to his employees. The employer, on the other hand, was denied freedom of speech in talking to his own employees. Now freedom of speech is largely restored.

Under the Wagner Act the employer was compelled to bargain with a certified union. Now the union must bargain, too.

Under the Wagner Act, unions alone had the right to petition for an election to determine whether the petitioning union represented a majority of the workers. Now the employer also has the right to secure an election.

These are features of the new Labor law that management must help workers understand. They must understand why the Act is not the "diabolical monstrosity" Philip Murray tells them it is.

Some companies have already started to explain these things to their workers. Techniques are well established, and they are techniques that any company can use. They include labor law digests in language workers can understand, supervisory conferences to cover points in the Act that affects the supervisor's handling of his job, distribution of reprinted articles that point out how employees benefit from the new law, editorials in plant newspapers and magazines, and advertisements in local newspapers.

II.

Management should take the lead whenever amendments to the Taft-Hartley law become necessary.

For twelve years labor leaders wilfully opposed every attempt to correct obvious abuses in the Wagner Act. We have now proved that a labor law *can* be amended. Let us be sure that management does not resort to the same obstructionist tactics labor has always used.

In carrying out its basic purpose to re-establish equality before the law, the Taft-Hartley Act makes it "unlawful . . . for any corporation whatever or any labor organization to make a contribution or expenditure in connection with" national elections. Corporations have long been so restrained. The novelty is the balancing restraint upon unions, which now have huge financial resources amounting to very many millions of dollars. However, the language of the Act *may* restrain the labor press from saying what it thinks about candidates, thus impinging upon the freedom of the press. Senator Taft has recognized this possibility.

If it should develop that the Act inadvertently throttles freedom of the press—or misfires otherwise—management should take the lead in securing suitable amendments to the Act. By assuming a completely stiff-necked attitude toward any and all changes in the Wagner Act, no matter how badly needed, the dominant labor leaders and their political outriders finally brought on the sweeping revisions provided by the Taft-Hartley Act. Management must not follow that example of stupid leadership.

III.

Management will be wise if it uses the new law gently in settling labor disputes.

So far employers show no disposition to use the law excessively. That is good. An analysis of the NLRB's docket from August 22 to September 30 shows that approximately 90 percent of the cases now before the Board were filed by unions and employees — not by employers.

We have been surveying employers, asking if they will have occasion to use their right to sue their unions. The answer so far is consistently, "*no.*" That answer frequently is accompanied by this remark, "We certainly hope not. We have no desire to conduct our labor relations in the courthouse."

The desired result should be for the Act to produce only those law suits that are matters of vital principle. As many employers have remarked, the courthouse remains the worst possible place to conduct labor relations. The best place is in the plant—by free collective bargaining between parties enjoying an equality before the law. The Taft-Hartley law will serve its most constructive role if it encourages this kind of collective bargaining.

IV.

Employers should not bargain away legal rights accorded to them by the Taft-Hartley Act.

By bargaining away rights given them in that Act, employers serve only to upset a carefully created balance of equality before the law which is an essential element of fair collective bargaining.

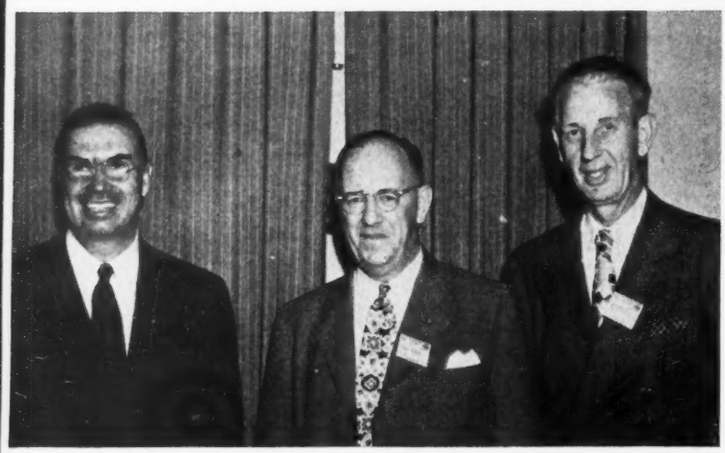
Also, by bargaining away rights properly accorded to them, they let down those members of Congress who, in voting for the Act, braved continuous threats of political assassination by powerful union leaders. For their statesmanship in the complicated field covered by the Taft-Hartley Act these Congressmen deserve the support and gratitude of the whole nation—of management, of labor, and of the public alike.

Fairly handled on all sides, the corrective force of the Act can be made a major bulwark of industrial freedom.

President, McGraw-Hill Publishing Company, Inc.

THIS IS THE 62ND OF A SERIES

Present and Accounted For...A PAGE OF PERSONALITIES



NEW BOSS of Construction Section, National Safety Council, is FRANK J. CRANDELL (left), of Liberty Mutual Insurance Co., Boston, named chairman of section at National Safety Congress in Chicago last month. He succeeds retiring chairman LLOYD BLANCHARD (center), U.S. Corps of Engineers. OTTO HOLMSKOG (right), Employers Mutual Insurance Co., Milwaukee, is new vice-chairman.

GEORGE H. BARTLETT AWARD for outstanding contribution to highway progress was awarded to H. S. FAIRBANK (right), deputy commissioner, Public Roads Administration, at recent convention of American Association of State Highway Officials, which, with American Road Builders Association and Highway Research Board, selects annual recipient. Presentation was made by PRA Commissioner THOMAS H. MACDONALD.

Photo, New York State Dept. of Public Works

NATIONAL CONSTRUCTORS ASSOCIATION, newly formed group of general contractor's engaged in building oil refineries, steel and chemical plants and related structures, has elected G. F. BAYES, director of construction of M. W. Kellogg Co., Torrence, Calif., president for next year.

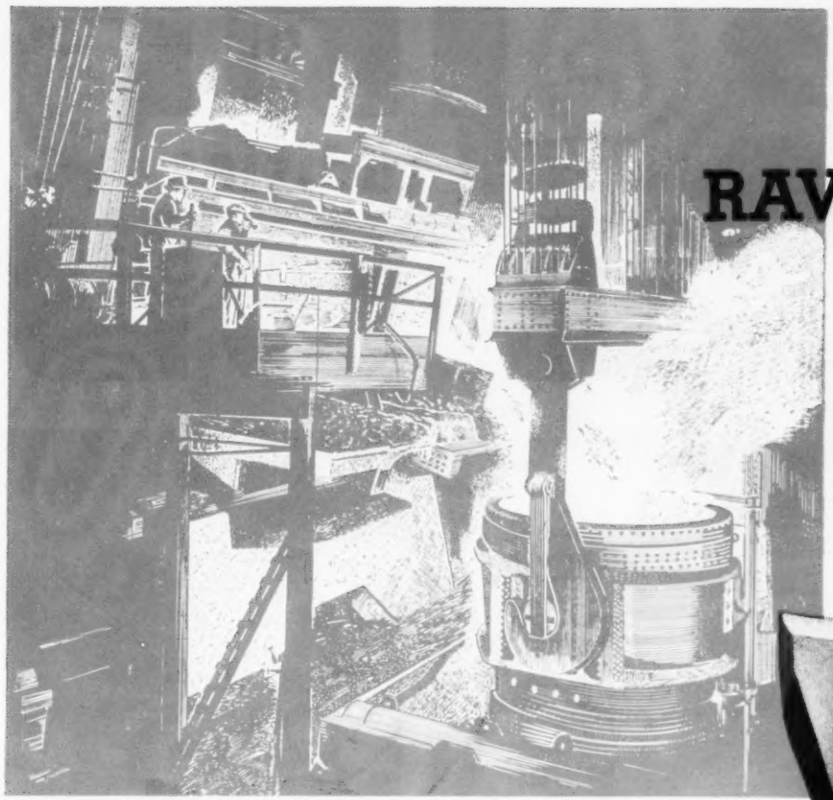
HOUSING SHORTAGE is discussed at first meeting of new National Housing Council in Washington, D. C. Members (below) are (left to right, seated): JOHN H. FAHEY, Home Loan Bank Board chairman; RAYMOND M. FOLEY, administrator of Housing and Home Finance Agency and chairman of Council; FRANK W. KELSEY, Veterans Administration assistant administrator of finance; (standing) BERCHMAN T. FITZPATRICK, general counsel, Housing and Home Finance Agency; FRANKLIN D. RICHARDS, Federal Housing Administration commissioner; DILLON S. MYER, Public Housing Administration commissioner; EDGAR A. STANSFIELD, Reconstruction Finance Corporation assistant general counsel; ROY J. BROUGHS, senior agriculture economist; and WILLIAM K. DIVERS, Housing and Home Finance Agency assistant administrator.

Press Assoc. Photo

NEW OFFICERS of Associated General Contractors of America, to take office at Dallas convention next February, will be DWIGHT W. WINKELMAN (center), Syracuse, N. Y., president, and ADOLPH TEICHERT (right), Sacramento, Calif., vice-president. They are shown here with FORREST W. PARROTT, current A.G.C. president, Sioux City, Ia., as they were nominated at recent A.G.C. Fall Board meeting in Des Moines.

RECENTLY ELECTED PRESIDENT of Connecticut Chapter, Associated General Contractors, is GEORGE R. JOHNSON (below), partner in Richard Johnson Co., of Hartford, Conn.

Hartford Courant Photo



FROM RAW MATERIAL TO FINISHED BIT

IT'S TIMKEN® THROUGH AND THROUGH!

Every ounce of steel that goes into Timken Rock Bits comes from Timken furnaces and is constantly under the control of Timken metallurgists. Developed as a direct result of our long specialized experience in steel manufacture and treatment it is the finest material ever produced for removable rock bits and is basically responsible for the outstanding performance, endurance and economy of Timken Bits in all kinds of rock.

Only in Timken Bits can you have the advantage of Timken steel plus Timken scientific design and precision manufacturing practice. We'll be glad to run tests under your operating conditions at any time.

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF

ROCK BITS

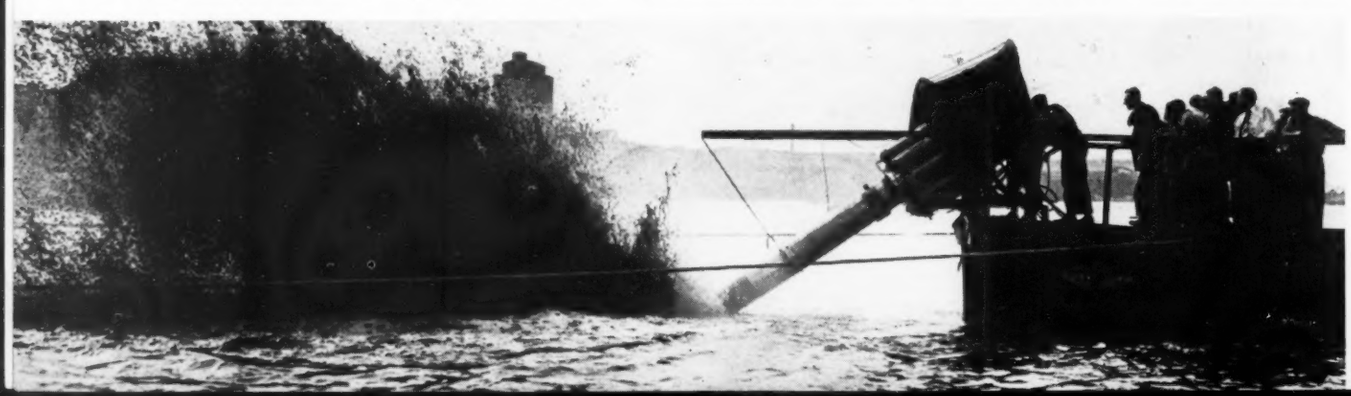
JOB oddities

ANCIENT BUT ACTIVE is this 38-ft. diameter water wheel creaking on wood bearings to lift water 30 ft. for irrigating farm in Muddy River Valley of Southern Nevada.

HUMAN LADDER relays pan of concrete to top of new building project in Bombay, India. Chain of men stand on crude scaffold of bamboo and rope. Concrete mixer is only piece of modern machinery on job.

OLD-TIME HOLING THROUGH of U.S. Bureau of Reclamation's Gunnison Tunnel for irrigation in Colorado marked Sept. 23, 1909, as red-letter day for town of Montrose, Colo., at outlet portal of 6-mi. rock bore, where President William Howard Taft officiated at tunnel opening ceremonies. In his honor citizens of Montrose erected archway illustrated above. When work was first started on Gunnison Tunnel, Bureau of Reclamation reports, "all drilling was by hand. One miner would hold a heavy drill and rotate it as a second miner whanged away at it with a sledgehammer." Photo, Reclamation Era

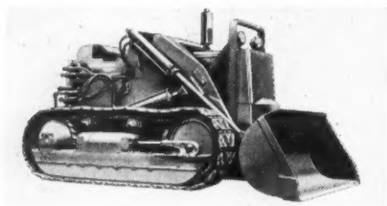
TURBO-JET (below) blows mud from Thames River bed as British Ministry of Supply experiments in dredging mooring basins at London docks. Theory is that blast from jet gas turbine will stir up accumulated mud sufficiently for removal by river currents. British Combine Photo



CONSTRUCTION EQUIPMENT NEWS

NOVEMBER 1947 REVIEW
of Construction Machinery and Materials

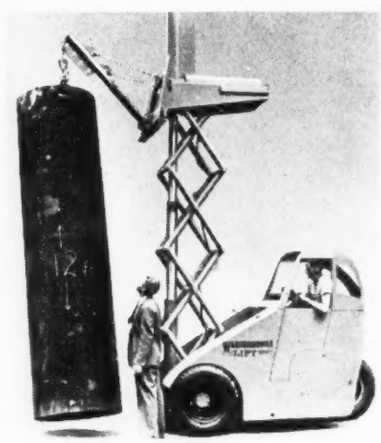
BULLDOZER-SHOVEL — Designed into International TD-14 diesel tractor, Model 14 2-yd. unit has large-capacity front-mounted hydraulic pump, directly connected to engine crankshaft to supply power for all operations. Automatic bucket tip-back tilts bucket back 38 deg. in carrying position to prevent spillage. Tracks are not tied down, but oscillate freely to conform to ground contour. Front-end superstructures are entirely eliminated, providing operator with complete visibility. Bucket extends full track width of tractor to permit excavation close to walls, embankments and slopes. Full track width bulldozer blade can be attached to enable unit to handle wide variety of bulldozing jobs. Bulldozer shovels are also available in 1-yd. size.—**Frank G. Hough Co., Libertyville, Ill.**



LOCOMOTIVE CRANE—New Diesel electric locomotive crane has 40-ton capacity. Electric power is used to travel crane along rails, while low-cost diesel power operates turntable and load-lifting mechanism. In addition to hook work, it is used with

grab bucket, grapple, magnet and for car switching. Electric power from traction generator energizes magnet, with over-excitation for maximum loading. Smooth, fluid starting and traveling is achieved through use of electric power on rails. Electrified drive, which eliminates many major moving and wearing parts, is said to cut maintenance as much as 50 percent.—**American Hoist & Derrick Co., St. Paul, Minn.**

LIFT TRUCK — Heavy-duty lift truck features hydraulic lift that will handle 6,000 lb. to height of 8 ft. or 4,000 lb. to 11 ft., yet collapse completely into truck body like bellows of camera. Wagnermobile lift weighs 7,425 lb. with fork and



boom. It works comfortably inside freight cars or in other narrow, tight quarters. Quick-change attachments make possible handling of wide variety of heavy or bulky materials. Hydraulic power steering, hydraulic lift and hydraulic tilt control give operator steering ease and positive control of load.—**Mixermobile Manufacturers, 6855 N.E. Halsey St., Portland 16, Ore.**

Can I fill my Hose Requirements with pre-war quality goods?

Your Thermoid Distributor Will Know!

He will tell you *No.* Today's products carrying the Thermoid trade mark are even better than pre-war quality. War born experiences plus latest technical advances provide the added quality. This new quality is in production . . . it is no longer necessary to take whatever you can get.

He can also tell you—

That Thermoid hose is made in a wide range of types and sizes. And, every type measures up to the service conditions for which it is sold.

He knows something about Thermoid too—

Thermoid concentrates its manufacturing for industry on the well integrated line shown below. The Company itself, is large enough for precise, low cost, high quality production, but small enough to be quickly responsive to customers' specific problems. That's one of the reasons why—

It's Good Business To Do Business With Thermoid!

A postcard or a letter to the home office will bring his name and address to you.

Manufacturers of new equipment are invited to correspond direct with the home office.

Thermoid
PRODUCTS FOR INDUSTRY
BUILT FOR THE JOB
QUALITY VALUE SERVICE

Thermoid Products

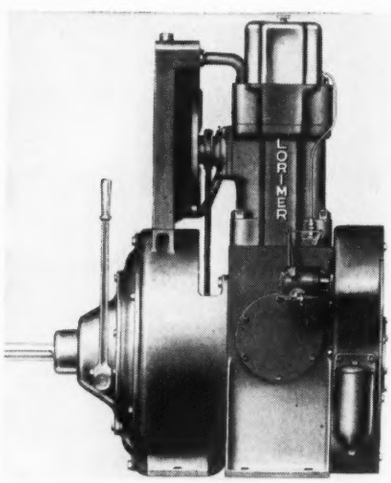
Automotive • Industrial
Oil Field • Textile
Thermoid Company, Trenton, N. J., U. S. A.

The Thermoid Line Includes: Industrial Brake Linings and Friction Products • Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Custom Molded Parts.

TRACTOR ATTACHMENT—Hystaway attachment, previously used on D6 and D7 Caterpillar track-type tractors, is now available for D8 model. Specifications now call for ½-cu. yd. bucket on D7 and D8 with ⅜-cu. yd. bucket on D6. Basic unit

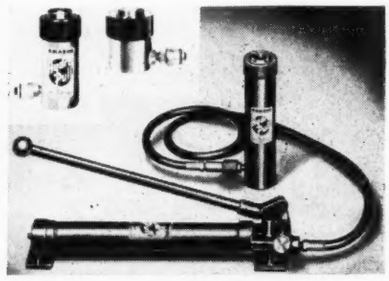
is now made for any of three models, with an attachment group for specific model. Attachment groups are also made for fitting unit to wide gage tractors and to those with additional attachments. Counterweight boxes are available for tractors used without bulldozers.—**Hyster Co., Portland 8, Ore.**

DIESEL ENGINE—Known as Sturdy Scot, new single-cylinder, vertical, four-cycle, stationary diesel engine has bore of 5¾-in. and 7½-in. stroke. Horsepower is 10 at 600 rpm., 12 at 720, and 14 at 800. The 3¾-in. dia. crankshaft is carried on two Timken roller main bearings; force



feed lubrication is provided for main, crankpin and wristpin bearings. Piston is 9⅛ in. long and carries five rings. Fuel system consists of standard heavy-duty pumps and injector. Heavy-duty filters are provided for both fuel and lube lines. —**Lorimer Diesel Engine Co., 16th & Wood Sts., Oakland 7, Calif.**

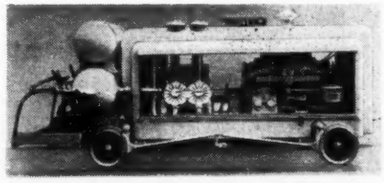
TRIPLE-SLEEVE RAM—Amazon Hydra-Pull has special center hole running through full length of ram which allows use of drawbar. This gives direct push or pull of far greater pressure than that of ordinary rams. It is 11 in. high and has 6-in. lift and 10-ton capacity. Triple-sleeve



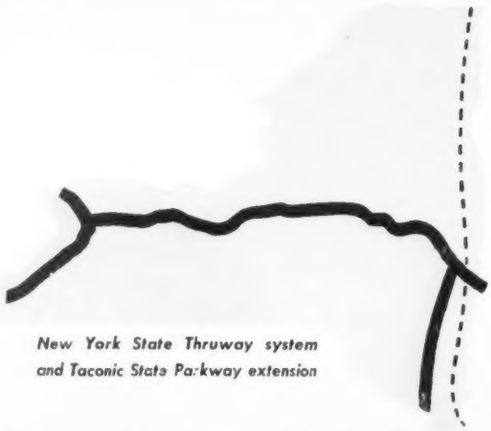
design gives positive control, eliminating all tendency to wobble, even when fully extended. Hand-operated, all controls are on pump. Hydra-Pull Jr. ram (inset, left) is 5⅜ in. high and has 2-in. lift and 10-ton capacity. Tom Thumb ram (inset, right) is 3 in. high, with 1-in. lift and 10-ton capacity.—**Sunset Equipment Co., 5838 Woodlawn Ave., Los Angeles, Calif.**

WELDING FUME EXHAUSTER—Portable welding fume exhauster, designed for use in welding operations where stationary ventilating systems are unavailable or impractical, is especially suited for operations in cramped, confined quarters. Exhauster efficiently removes harmful welding fumes and provides clean, safe atmosphere. It weighs only 25 lb., is 34 in. long and 10 in. in diameter, is completely self-contained and requires minimum of maintenance.—**Mine Safety Appliances Co., Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa.**

RAIL-CAR COMPRESSORS—Manufactured in 60, 105, 160, 210 and 315-cfm. capacities, new unit is equipped with railway type brakes and operator's platform capable of carrying four persons. Motive power



is furnished by air motor with clutch which provides forward and reverse speeds of from 4 to 10 mph. Because of its power reserve, machine can be used to tow other equipment. Transverse wheels provide for easy removal from tracks.—**Davey Compressor Co., Kent, Ohio.**



New York State Thruway system and Taconic State Parkway extension

On the "CATERPILLAR"

Thruway

ZONED EQUIPMENT STARS AGAIN

1 "Caterpillar" Diesel DW10 Tractors pulling shovel-loaded W10 Wagons on long-haul work.

2 "Caterpillar" Diesel Tractor bulldozing trees and stumps on right-of-way clearance.

3 "Caterpillar" D8 Tractors on scraper loading and medium-haul work.

4 "Caterpillar" Diesel DW10 Tractor and W10 Wagon dumping shale and earth on fill.

5 "Caterpillar" Diesel D13000 Engines powering compressors used in driving wagon drills for blast holes.

From master-minded engineering and construction will be born "the biggest project since the Erie Canal"—the 486-mile super-highway across the Empire State. Adding the Taconic State Parkway extension, running north to the Canadian border, New York has one of the country's greatest highway programs.

Zoned construction links provide ideal set-ups for zoned (co-ordinated) earthmoving equipment★. And "Caterpillar" products are ideal for zone-equipping big-scale jobs for fast, efficient, economical top-volume production.

"Caterpillar" products constitute the only "complete package" of earthmoving power units and tools built by one manufacturer, expressly designed to work together, and supported through one well-trained, specially equipped dealer organization in the matter of replacement parts and mechanical service.

The illustrations on these pages offer spot glimpses of "Caterpillar" equipment in action on several initial sections of the great Thruway and the Taconic State Parkway extension.

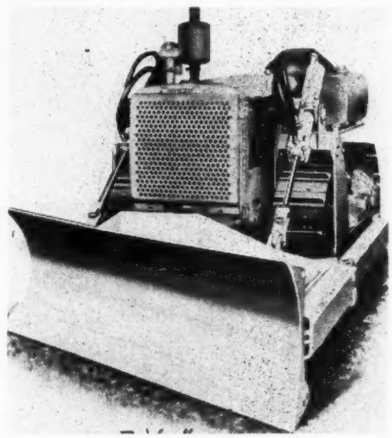
CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

★"CATERPILLAR" builds the matched units you need to zone equipment for lowest costs on earth:

- **Track-type tractors and bulldozers for "push" distance earthmoving.**
- **Track-type tractors and scrapers for medium-haul earthmoving distances.**
- **Wheel-type tractors for high-speed long hauls . . . plus motor graders for finishing work.**

CATERPILLAR
REG U S PAT OFF
DIESEL
ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

BULLDOZER—Straight and angle dozers, available for D4 and D6 Caterpillar tractors, incorporate fluid power control provided by LaPlant-Choate hydraulic pump. D4 models are track mounted, direct-lift, double-acting units with full-floating



trunnion rams and positive down pressure. D6 dozer is frame mounted and incorporates new compact pump with minimum of hydraulic piping. Rigid frame with floating moldboard provides great strength, offset pivot pin for clearance, easy removal of main frame and blade, reversible cutting edge, correct and proved blade curvature.—**Wm. Bros Boiler & Mfg. Co., Minneapolis, Minn.**

FASTER AND CHEAPER SNOW LOADING . . .

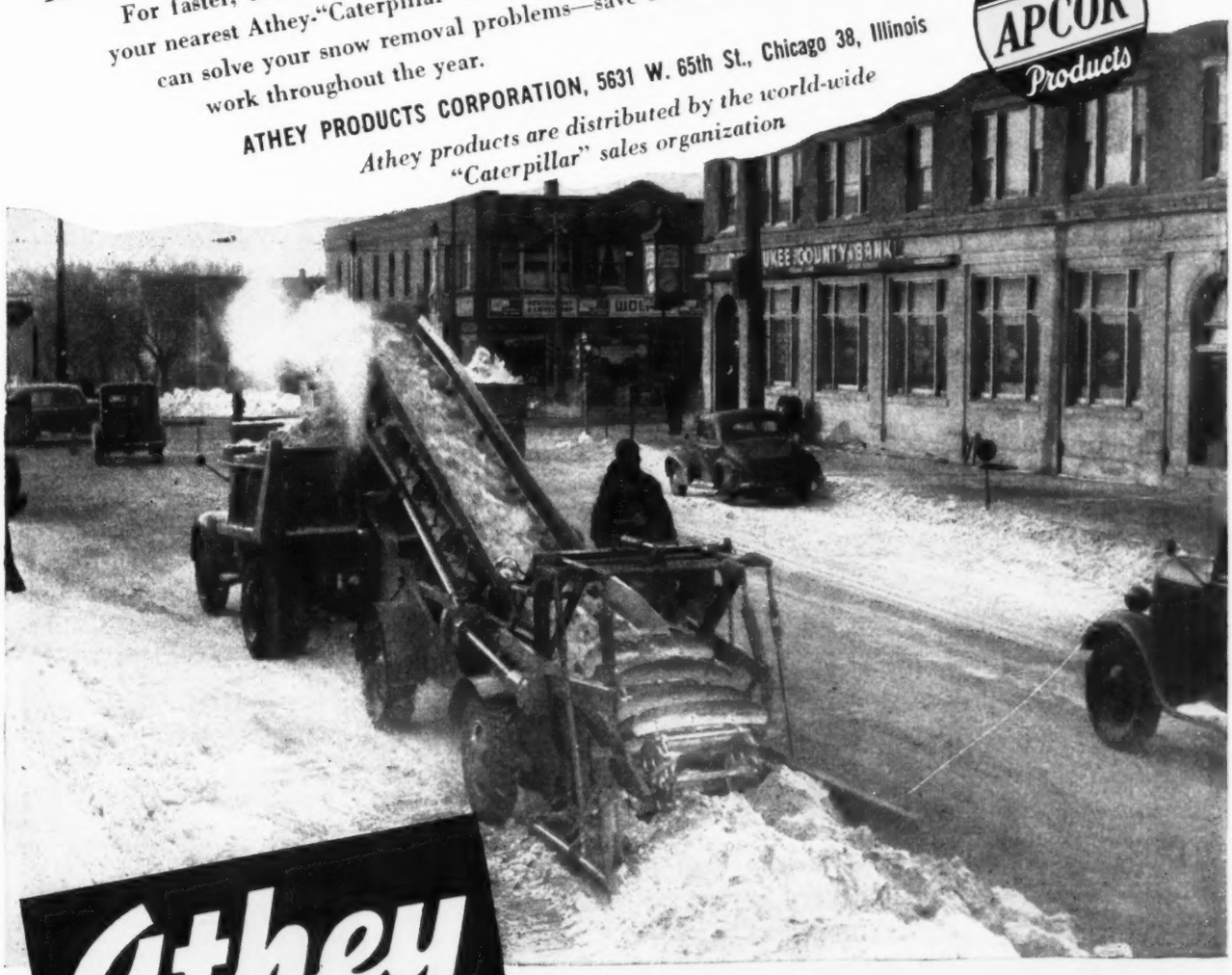
The new Athey Force-Feed Loader is a big capacity, self-propelled loader capable of faster and easier snow removal. Snow, bladed into windrows at the curb or in the center of the street, is loaded quickly and cleanly by this proved loader. Hydraulically controlled down-pressure on the Force-Feed Loader's moldboards and cutting edges — plus 76" "gather" permit clean pick-up of broad based windrows. High-speed feeder and elevator belt move snow fast — so fast that a 5 yd. truck can be loaded in 30 seconds. The result obtained with this revolutionary loader is lowest cost snow loading.

For faster, easier, and cheaper snow loading investigate the Athey Force-Feed Loader at your nearest Athey-"Caterpillar" dealer today. Find out how this versatile loader can solve your snow removal problems—save on road maintenance work throughout the year.

ATHEY PRODUCTS CORPORATION, 5631 W. 65th St., Chicago 38, Illinois

Athey products are distributed by the world-wide "Caterpillar" sales organization

Athey APCOR Products



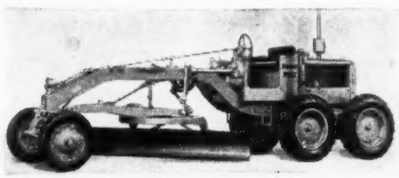
Athey

FORCE-FEED LOADERS

EARTH DRILL—Hydraulically controlled Model HJB earth boring machine drills 6- to 42-in. dia. holes to depths of 10 ft. Steady hydraulic power moves tower into instant

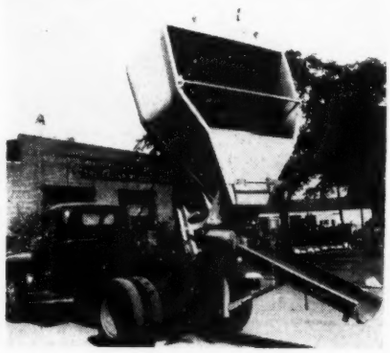
operating position. Other fingertip controls quickly permit adjustment of drill head to vertical position. All leveling adjustments for straight or anchor holes are completely hydraulic. It is powered by slow speed 4-cylinder Buda gasoline engine mounted on I-beam of structural steel.—**Buda Co., Harvey, Ill.**

MOTOR GRADER—New diesel No. 212 features 45-hp. maximum output, increases in all of its four forward speeds; power-operated mechanical controls equipped with effective brakes which prevent creeping or coasting under load; arched front axles which provide maximum clearance; and manufacturing improvements resulting from use of new, harder metals and better heat treatment. Its power increase is due to



new D311 engine. Refinements of this engine are: Bore increase from 3¾ in. to 4 in.; chrome-plated top piston rings; divided manifolding; larger and more efficient air cleaners; improved oil pressure control system; new fuel injection valve design with pressure-operated valve mechanism inclosed in copper capsule; new governor, anti-friction bearing equipped to provide sensitive, accurate control; and three-tube type oil cooler mounted beside and flush with water radiator core. Also announced is new D2 tractor, which develops maximum 32 drawbar horsepower. — **Caterpillar Tractor Co., Peoria 8, Ill.**

ALL-PURPOSE DUMP BODY—Designed primarily for hauling and placing of top quality air-entrained concrete and adaptable to transportation of aggregate and similar bulk materials, new unit provides smooth, complete discharge of concrete from



bottom of body first, preventing premature decantation of lighter materials from top of load and eliminating segregation and bleeding. Four point suspension and low hinging provide maximum safety in high discharge operation. Unit is easily maneuvered even on subgrades. Full-scale production of 3-cu. yd. capacity model is now under way.—**Hercules Steel Products Corp., Galion, Ohio.**

DIG DIG DIG ON THE DOUBLE!

TWO TRAXCAVATORS AVERAGE 150 YARDS AN HOUR IN WET CLAY AND HARDPAN

Here's a case where Old Man Weather plotted against contractor Chet M. Herringer of Minneapolis. Unusually heavy rains and cold held up this 6000 yard excavation job until it was far behind schedule. But there was one thing Old Man Weather forgot — Chet Herringer's TRAXCAVATORS.

Chet put two of his one-yard Model IT4's on this job. Their direct-digging action, backed up with surefooted "Caterpillar" D4 tractor power, dug and loaded the wet, sticky clay and hardpan at a rate of 150 cubic yards an hour!

TRAXCAVATORS get work done! Put them to work digging, grading, excavating, loading and watch your hourly production climb. Their proven ability to do *more work* on *more jobs* on *more days* of the year means low-cost performance and greater profit for you.

TRAXCAVATORS are available in four sizes with bucket capacities from ½ to 4 cubic yards. See your TRACKSON-"Caterpillar" dealer for profit-making ways you can use one or more of these rugged versatile machines in your work or write TRACKSON COMPANY, Dept. CM-117, Milwaukee 1, Wis.

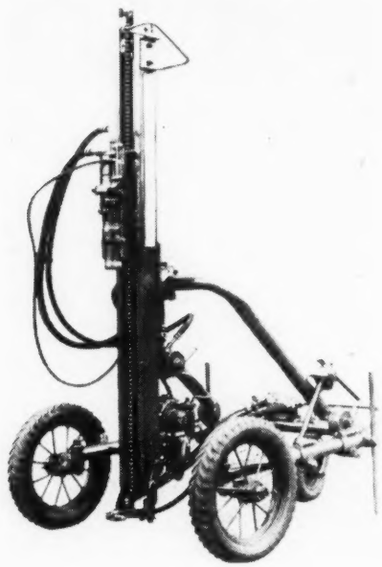
TRAXCAVATOR

REG. U. S. PAT. OFF.

The Original Tractor Excavator

WAGON DRILL—New wagon drill has 3-wheel Universal mounting with motor feed for 6-ft. steel changes. Motor feed is operated by powerful 5-cylinder radial air motor, driving chain attached to heavy mounting slide carrying drill. It carries 3½- or 4-in. bore derrick drill. Feed can be reversed instantly for effective churning. Drills have air-

(*Continued on page* 134)



THE HUBER MFG. COMPANY • MARION, OHIO, U. S. A.

HUBER

3 Wheel • Tandem ROAD ROLLERS and MAINTAINERS

• That's right, dual control—a new, practical TL-20 feature that "lets you have your cake and eat it, too" insofar as mobility is concerned. Here's a two engine unit offering the "get up and go" mobility of the Moto-Crane between jobs and, which on the job, becomes a Self-Propelled unit operated and air steered from the turntable cab and powered for on-the-job mobility by the turntable engine.

Conversion from Moto-Crane to Self-Propelled unit represents a simple 5 minute operation. The TL-20 Moto-Crane, with Dual Control, is available as a 4-wheel unit with front wheel drive or a 6-wheel unit with or without front wheel drive.

TO-THE-JOB MOBILITY The TL-20's rubber-tire Moto-Crane mounting has 8 speeds forward, ranging from 1 to 33 M. P. H., and 2 reverse speeds. There's high speed travel for the highway plus a low speed range and "soft ground flotation" to master rugged off-the-road travel. Neither distance or terrain is a problem to the fast-stepping, sure-footed Moto-Crane.

ON-THE-JOB MOBILITY Conversion to a Self-Propelled unit saves time on the short moves about the job. Once the changeover is completed, the operator merely starts the turntable engine and goes to work. On-the-job travel is powered by the turntable engine at 1 to 8 M. P. H. in either direction. Steering is by air power with all steering and brake controls located conveniently at the operator's position in the turntable cab.

Complete data on the Dual Control TL-20 can be obtained from your local Thew-Lorain distributor.

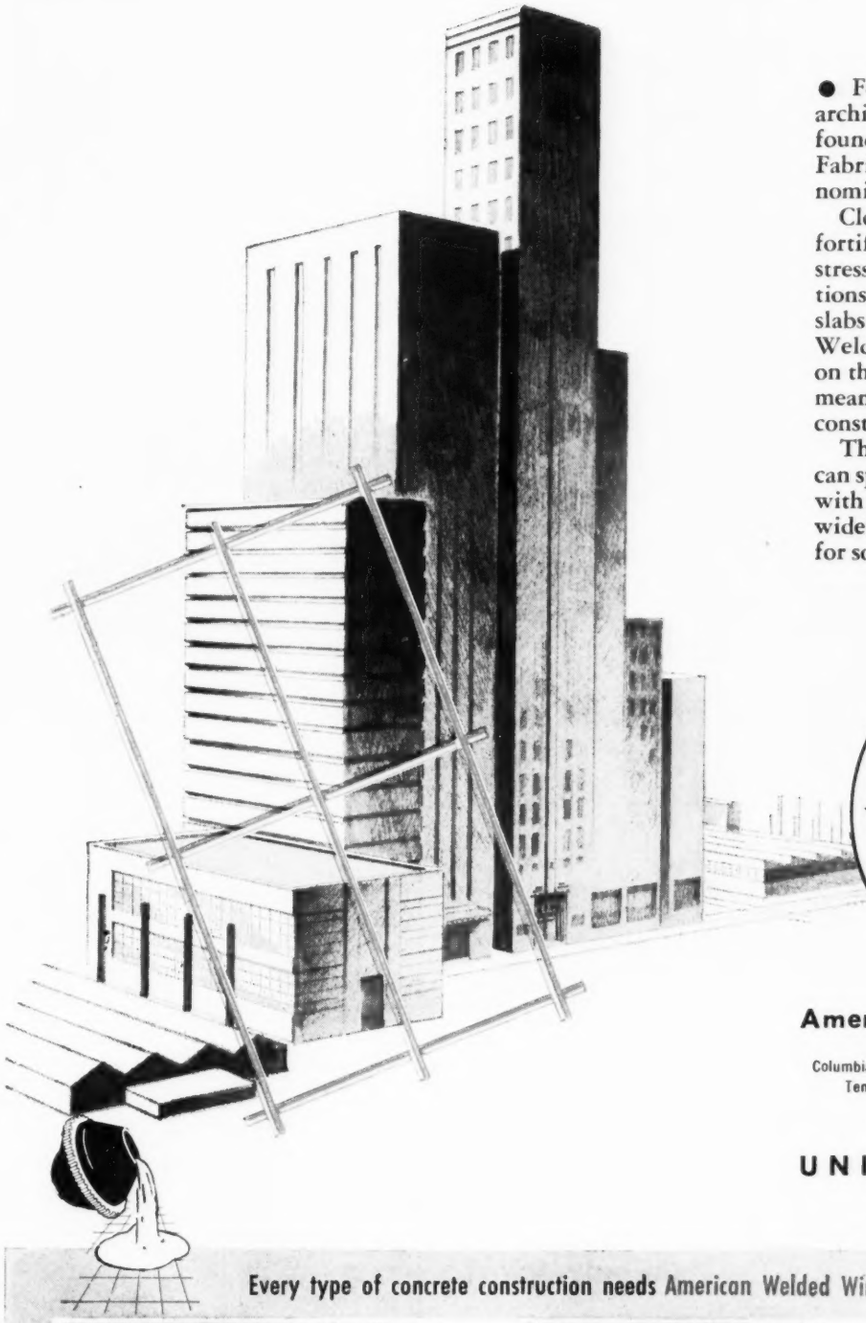
thew-Lorain®

THE THEW SHOVEL CO.
Lorain, Ohio

CRANES • SHOVELS • DRAGLINES • MOTO-CRANES

Planning Concrete Construction?

Specify American Welded Wire Fabric



● For a wide variety of purposes, many architects and construction engineers have found U·S·S American Welded Wire Fabric the most effective and most economical concrete reinforcement.

Closely spaced cold drawn steel wires fortify wall, floor and roof slabs against stresses, strains and shocks—in all directions. Less steel, less concrete is needed for slabs of adequate strength. American Welded Wire Fabric needs no assembling on the job, is easily and quickly laid. That means important savings on material costs, construction time and labor cost.

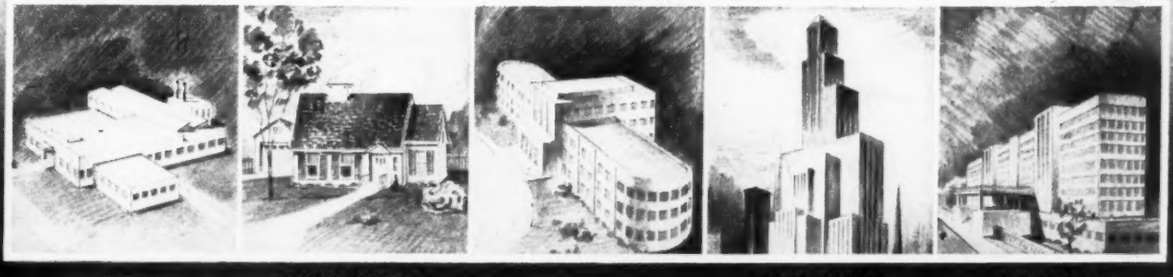
These are some of the reasons why you can specify American Welded Wire Fabric with confidence, and why it is the most widely used prefabricated reinforcement for so many kinds of concrete construction.

AMERICAN STEEL & WIRE COMPANY
USS
AMERICAN WELDED WIRE FABRIC
UNITED STATES STEEL

American Steel & Wire Company
Cleveland, Chicago and New York
Columbia Steel Company, San Francisco, Pacific Coast Distributors
Tennessee Coal, Iron & Railroad Company, Birmingham, Southern Distributors
United States Steel Export Company, New York

UNITED STATES STEEL

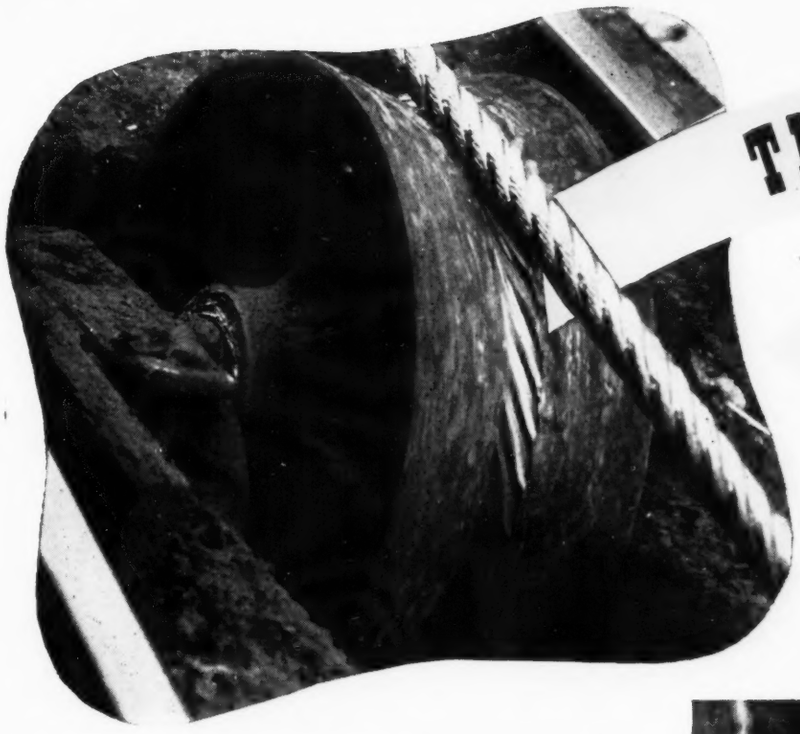
Every type of concrete construction needs American Welded Wire Fabric reinforcement.



FACTORIES — SMALL HOMES — SCHOOLS — SKYSCRAPERS — HOSPITALS

(*Continued from page* 130)
actuated exhaust control valve operated by drill throttle handle. U-bar is adjustable from position slightly above horizontal through arc of 90 deg. to one practically vertical.—**Gardner-Denver Co., Quincy, Ill.**

FIRE EXTINGUISHER—New 4-lb. model dry chemical fire extinguisher is suitable for putting out fires in flammable liquids, gases, solids and electrical equipment and controlling fires in ordinary combustibles. It is 19⅛ in. long and 3½ in. wide and designed for effective use by inexperienced operators. Extinguishing agent used is said to be non-toxic, noncorrosive, nonabrasive and a non-conductor of electricity.—**Ansul Chemical Co., Marinette, Wis.**

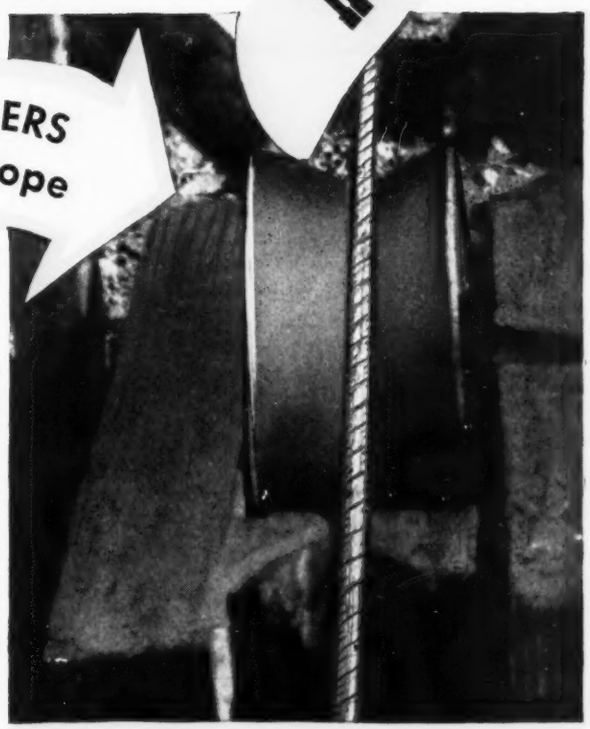


THIS CAN'T HAPPEN HERE

AMSCO MANGANESE STEEL ROLLERS Won't Score . . . . . Protect Wire Rope

Kill two costs with one installation — up to 96% longer roller service and 51% longer wire rope service reported by users of Amsco Manganese Steel Rollers. Wearing out rollers and sheaves won't conserve wire rope — installation photograph above shows how rope leaves its imprint on softer metal rollers. Scored roller in turn acts as file, especially on new rope, to cause rapid wear and breakdown. Soft metal particles become imbedded in rope and further decrease service life.

Non-scoring, Amsco rollers and sheaves are made of austenitic manganese steel. Under pressure and friction, "the toughest steel known" develops a hard, "plow-share" surface finish that reduces wear to a minimum . . . yet body metal remains tough, ductile to resist sudden load impacts. Rope and roller service on Philippine log-hauling aerial tramway at right now measured in years rather than months since Amsco rollers replaced cast iron rollers. Send for bulletin 842-WS.



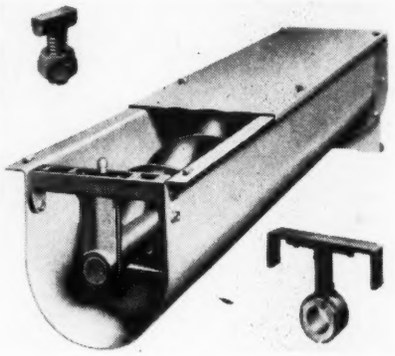
One of 146 rollers used at high points on an aerial tramway in Philippines to keep main line hauling cable off ground as logs are pulled through valleys.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.

SPIRAL CONVEYORS—New design of cover and T-head bolt is being produced for spiral conveyors. Cover is flanged, providing smooth rounded edge and adding stiffness which permits use of fewer bolts than formerly. Slotted holes in cover permit it to pass over T-head bolts without removing them. By giving quarter turn to these spring-mounted T-head bolts, cover is locked securely. It may be easily removed by reversing procedure.—**Jeffrey Mfg. Co., Columbus, Ohio.**



CHAIN HOISTS—New line of high grade differential chain hoists features full weight accurately cast sheave wheels, high tensile malleable iron frames with reinforcing ribs, drop forged heat treated hooks, special analysis hoist chains precision made to fit sheave pockets, lower hook mounted on ball thrust bearing for easy alinement of loaded chain to upper pocketed sheave and swiveling of load. Made in ¼, ½, 1 and 1½-ton capacities.—**Chester Hoist Co., Lisbon, Ohio.**

STANDARD ENGINEERS NOTEBOOK

CALOL RPM

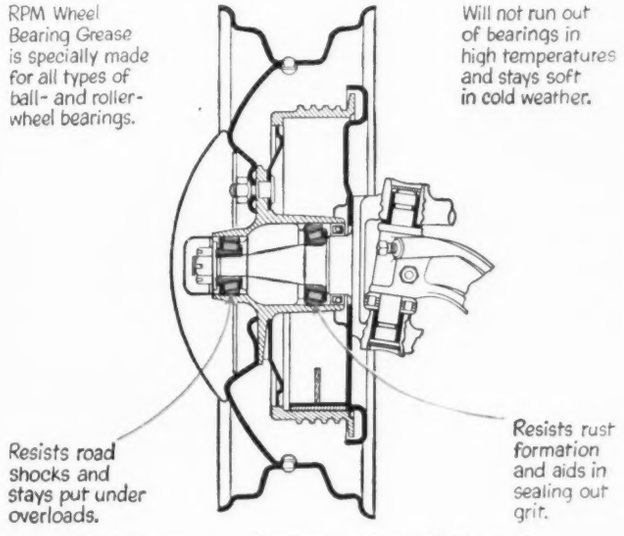
Shock-resisting grease lengthens bearing life

To prevent extra wear and the necessity for replacing wheel bearings during the life of a vehicle, service them regularly with RPM Wheel Bearing Grease.

A short fibre lubricant, specially made for both ball, and roller wheel bearings, RPM Wheel Bearing Grease does not melt and throw out of bearings during hot operating conditions. It feeds slowly from bearing reservoirs and provides thorough lubrication for prolonged periods.

RPM Wheel Bearing Grease has the unusual ability of reducing the pounding of road shocks imposed on wheel bearings. It cushions the force of these shocks, minimizes metal fatigue and overheating and reduces vibration.

Extremely adhesive, RPM Wheel Bearing Grease helps maintain a seal around bearings against corrosive moisture. This seal also aids in keeping dust and grit out of bearings.



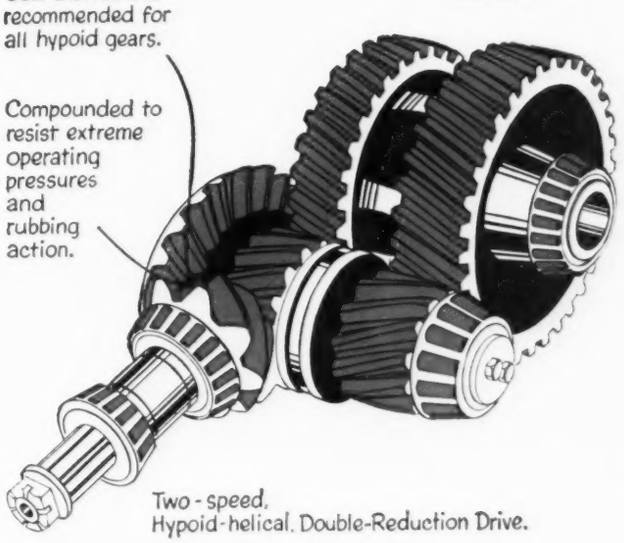
This drawing prepared with cooperation of Timken Roller Bearing Co.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

RPM Multi-Service Gear Lubricant is recommended for all hypoid gears.

Highly oxidation-resistant.

Compounded to resist extreme operating pressures and rubbing action.



Two-speed, Hypoid-helical, Double-Reduction Drive.

New lubricant can be used in all type gears

The drive gears in automotive equipment operating under the most severe conditions are fully protected by newly-developed RPM Multi-Service Gear Lubricant. It resists the tremendous pressures and extreme temperatures encountered in hypoids as well as in heavily loaded conventional gears.

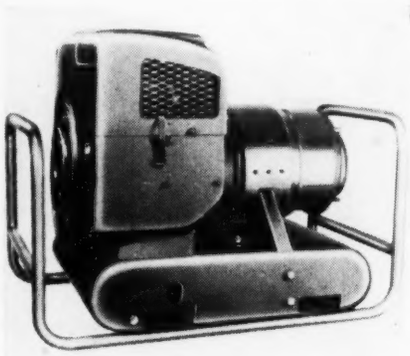
Special compounds in RPM Multi-Service Gear Lubricant react on tooth bearing surfaces and provide a safety coating. They also give the lubricant maximum resistance to foaming, better resistance to oxidation, and provide better protection from corrosion. The compounds are very stable in the blend and will not drop out of solution.

RPM Multi-Service Gear Lubricant is approved by the Timken Detroit Axle Co. and Buick Motor Division, General Motors Corp. for service use in hypoids, and the Army Ordnance Dept. as conforming to U. S. A. Specification 2-105-B. It is made in four grades: SAE 75 (for Alaska only), 80, 90 and 140.

For additional information and the name of your nearest Distributor, write Standard of California, 225 Bush Street, San Francisco 20, Calif.; The California Oil Company, 30 Rockefeller Plaza, New York 20, N. Y.; The California Company, 17th and Stout Streets, Denver 1, Colo.; Standard Oil Company of Texas, El Paso, Texas.

FOR EVERY NEED A STANDARD OF CALIFORNIA JOB-PROVED PRODUCT

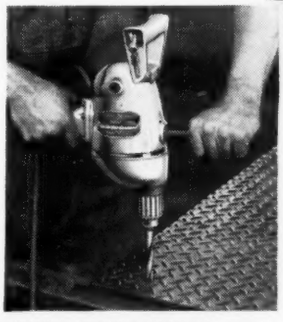
ELECTRIC PLANTS—New 5,000-w. electric plant, known as 5CK-115M, weighing only 272 lb., is one of improved group of plants employing new CK air-cooled, four-cycle, two-cylinder gasoline engine as prime mover. It will produce about 1 kwh. of electricity per quart of gasoline. Most models, both a.c. and d.c., have



electric push-button starting. Standard equipment for manual starting models includes protective guard-frame and convenient four-receptacle outlet box for direct plug-in of loads. Plants are available in 60- or 50-cycle a.c. (2,000 and 3,000 w.) and d.c. (5,000 w. and 3,500-w. battery charger) in portable or stationary types.—**D. W. Onan & Sons, Inc., Minneapolis 5, Minn.**

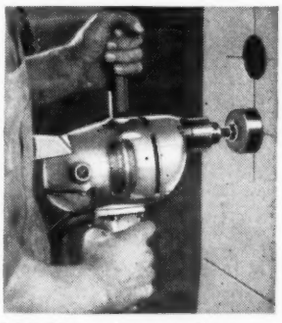
WORLD'S STANDARD ELECTRIC DRILL

BLACK & DECKER
1/2" STANDARD DRILL
$53.00



DRIVES TWIST DRILLS up to 1/2" diam. in steel

DRIVES WOOD AUGERS up to 1" diam. in hardwood



DRIVES HOLE SAWS up to 3 1/2" diam. in sheet steel

Saves You Time . . . Cuts Costs
The Right "All-Purpose" Drill

The pictures tell the story of why the Black & Decker 1/2" Standard Drill leads in popularity with electric tool users. The spindle speed is just right for all sorts of general purpose work in metal, hardwood, plastics, etc. . . . on maintenance, repair and construction jobs. Perfect operating balance, weighs only 9 3/4 lbs. Minimum spindle offset and horizontal spade handle designed for work in close quarters. And the tool is expertly built of first-quality materials to give years of service. Universal (A.C.-D.C.) motor; standard voltage, 110; also available for 32, 220 or 250 volts.

Ask your nearby Black & Decker Distributor to show you this most popular Drill of many uses. And remember, he's ready to give you expert help on any other tooling problem. For your free copy of our catalog, write to: The Black & Decker Mfg. Co., 659 Pennsylvania Avenue, Towson 4, Maryland.

LEADING DISTRIBUTORS  EVERYWHERE SELL

Black & Decker
PORTABLE ELECTRIC TOOLS

MULTIPLY Your Drill's USEFULNESS with these ACCESSORIES

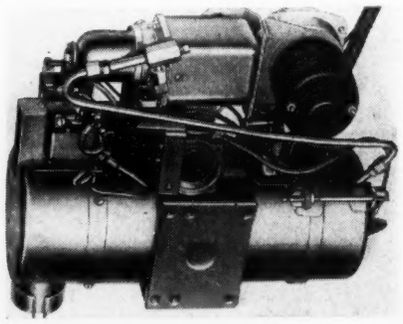
HOLE SAWS: Cut clean, round holes in any material a hack saw will cut; 5/8" to 4" diameters.

BENCH STANDS: Quickly convert your Portable Drill to drill press use for accurate and heavy-duty work.

RIGHT ANGLE ATTACHMENT: For drilling and boring around corners, in close clearances.

FEED SCREWS: A mechanical "push" for constant, steady feed pressure in close quarters.

ENGINE HEATER—Superflex heater insures quick starting and continuous operation of heavy-duty motorized equipment in severest cold. Externally-fired heater burns liquid fuel and operates independently of engine, which it heats by warming engine coolant. In addition, heater's exhaust gases pass through heat exchanger to warm engine oil, battery



or cab. Heaters are furnished for either completely-automatic, thermostatically-controlled operation or for varying degrees of operator control. They come equipped with steel heat exchanger for coolant circulation, operating with thermo-syphon head. They are small enough to permit mounting on automotive equipment, usually under hood in engine compartment.—**Perfection Stove Co., Cleveland, Ohio.**

10 MAJOR ADVANTAGES that mean higher production and lower yardage costs

MEASURE EACH JOB IN TERMS OF WOOLDRIDGE EQUIPMENT:

★ **SCRAPERS**
Tractor-drawn for handling heaping yardages from 6 to 28 cu. yards.

★ **POWER CONTROL UNITS**
Single and multiple drum with universal or roller fairleads.

★ **BULLDOZERS**
Tough and rugged design for standard makes of tractors.

★ **TRAILBUILDERS**
Adjustable angle blades for standard tractor mounting.

★ **RIPPERS**
Available in light, medium, and heavy duty models.

Point for point Wooldridge Terra-Cobras offer you greater yardage profits. When you put Terra-Cobras on your job you gain these outstanding Wooldridge performance features.

1. FIVE years of fully tested and proved performance under all types of operating conditions.
2. The original POSITIVE *HYDRAULIC* STEERING CONTROL.
3. Flexibly articulated oscillating pivot for easier, safer travel.
4. Smooth powerful air-controlled cable hoist.
5. Individual control of blade, apron, and positive tilt forced load ejector.
6. Balanced load distribution with maximum traction and power on drive wheel centers.
7. Greater maneuverability combined with shorter turning radius.
8. Ample power, acceleration and speed fully loaded.
9. Faster loading, dumping, and spreading.
10. All parts easily accessible for service maintenance.

WOOLDRIDGE MANUFACTURING CO.
SUNNYVALE, CALIFORNIA

NATIONWIDE SERVICE

Buy & Rely on

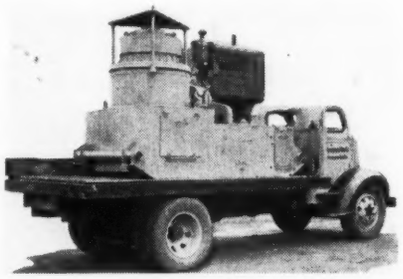
WOOLDRIDGE

TERRA COBRA

HIGH SPEED-SELF PROPELLED

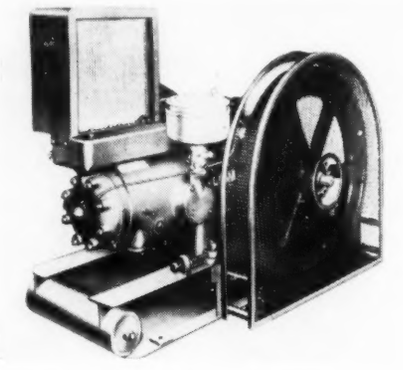
EARTHMOVERS

PORTABLE CRUSHING UNIT—New unit consists essentially of 22-in. Symons cone crusher, motor and drive, mounted on welded steel supporting base and skid. Specially applicable to contractor type service, it is also efficient unit for semi- or fully portable operations or for stationary plant operation as compact, self-contained, secondary reduction unit. Capacity varies from 20 tons per hour at $\frac{3}{8}$-in. setting to 60 tons per



hour at $1\frac{1}{2}$-in. setting. Electric-driven unit is furnished with 25-hp. 1200-rpm. motor for 60-cycle service. On diesel and gasoline engine units steel supporting base is fitted with built-in 85-gal. fuel oil compartment and 60-gal. lubricating compartment. Diesel engine has oversize rating of 50/55 hp. at 1500-rpm. governed speed. Shipping weight of electrically driven unit is 10,500 lb. and of engine-driven unit, 12,400 lb. Overall dimensions are $122\frac{1}{2}$ in. long; $71\frac{1}{2}$ in. wide, including V-belt drive and housing, and $86\frac{1}{4}$ in. high.—**Nordberg Mfg. Co., Milwaukee 7, Wis.**

MULTI-FUEL ENGINES—Lorain Type L heavy-duty single-cylinder, horizontal, two-cycle engine will operate on diesel fuel, natural gas or butane. It has rating of 10.7 hp. at 300 rpm. and 21.4 hp. at 600 rpm.. It has $7\frac{1}{2}$-in. bore and 8-in. stroke with Timken bearings on crankshaft and cross-shaft. "Wet" cylinder liners can



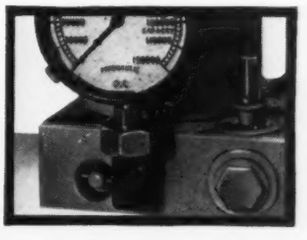
be replaced in field. Condenser type cooling system eliminates need for water pump, and make-up water is negligible. Standard equipment includes Twin Disc clutch, Pierce governor, Air Maze oil bath type cleaner, and McCord lubricator. Engine is $52\frac{1}{2}$ in. high, 70 in. long and $47\frac{1}{4}$ in. wide. Shipping weight is 2500 lb. —**White-Roth Machine Corp., Lorain, Ohio.**

New... built for Construction

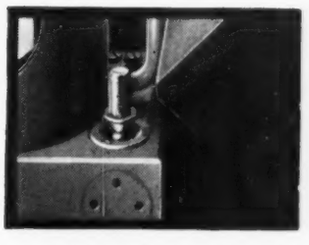
An *Exclusive* combination of Benefits are now Created for You by These New Heavy-Duty Jacks!

PATENTED DOUBLE PUMP—all in ONE unit! Speed pump provides fast load-contact—powerful load pump cuts in automatically! No shifting handle or double-yoking as with separate pumps.

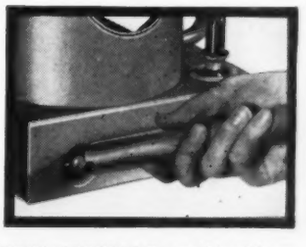
ALL-DIRECTIONAL OPERATION—Full power and travel at any angle, vertical to horizontal. Handle forms positive side-rest for horizontal use.



GAUGE EQUIPPED — Base is tapped for hook-up of gauge to show amount of pressure exerted — for measuring or testing applications.



PUMP BEAM PROTECTION is provided by handle and base. Pump is concealed. Beam is protectively enclosed at entry point to base.



SUPER STRONG BASE—machined from single piece of non-porous steel. Release valve is recessed to prevent accidental lowering and breakage.

CHECK these cost-cutting features of the new 30-ton FB-11 and the 50-ton GB-11. They bring you outstanding new jack performance never before known in construction and maintenance work. (Other Blackhawk models include 3, 5, 8, 12, and 20-ton sizes.) See your Blackhawk Industrial Supply Distributor for full information on these new Jacks.

A Product of **BLACKHAWK MFG. COMPANY, Dept. J-27117, Milwaukee 1, Wisconsin**

Always Specify

BLACKHAWK
HYDRAULIC JACKS

UNIT'S "Big 3"

Designed for FASTER and EASIER OPERATION . . . where the Going is TOUGH!

UNIT 514
½-Yard Dragline

UNIT 1020
¾-Yard Shovel

ALL Unit Models are Convertible to ALL Attachments

UNIT 357
5-Ton Mobile Crane with Magnet Attachment.

Here are three time-tested UNIT machines that continue to "make the headlines" because of their unusual speed, efficiency and all-around dependability. Check the following exclusive UNIT features: *Compact, streamlined design . . . Straight line engine mounting . . . Drop forged alloy steel gears . . . Automatic traction brakes . . . Interchangeable disc type clutches . . . One-piece cast gear case* . . . and above all, UNIT's safety-promoting *FULL VISION CAB.* No other excavator on the market has all these features.

CONTACT FACTORY DIRECT
for Price and Delivery
or See Your Dealer

UNIT CRANE & SHOVEL CORP.

UNIT CRANE & SHOVEL CORP. UNIT MILWAUKEE WISCONSIN

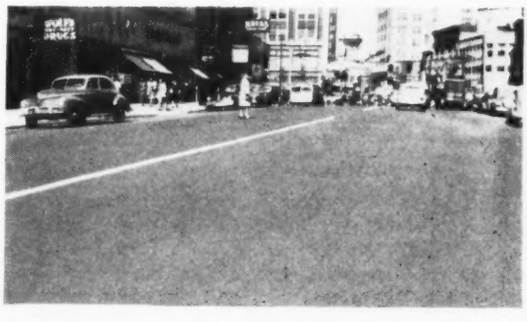
6305 W. BURNHAM ST.
MILWAUKEE 14,
WISCONSIN, U.S.A.

"As easy as icing a cake..."

Newspaper reporter's description of the ease and precision with which new Texaco Asphalt paving was laid on old Elizabeth, N. J., streets

Laying a new Texaco Asphaltic Concrete wearing surface on one of a number of old, rough streets in Elizabeth, N. J.

BEFORE: The old pavement on Broad Street, Elizabeth, was rough on motorists and unsightly.



AFTER: The new Texaco Asphaltic Concrete surface is smooth, resilient, rugged—a welcome improvement to motorists.

This year, the city of Elizabeth, N. J., tackled its biggest street improvement program in many years. Fourteen worn, rough sections of important arterial streets were scheduled for resurfacing, including Broad Street, the city's busiest thoroughfare.

Elizabeth chose a fine-graded Asphaltic Concrete pavement for its streets. Dense, rugged and resilient, this plant-mix type of asphalt construction will stand up under years of hard wear with a minimum of maintenance.

Depending upon the condition of the old street, from one to three courses of Asphaltic Concrete were employed. Texaco Asphalt Cement, with a penetration between 60 and 70, has been used almost exclusively by the contractors, the Standard Bitulithic Company and the American Paving Corporation, both of Newark, N. J.

Elizabeth is one of 1,500 representative U. S. cities which have paved with resilient, lasting Texaco Asphalt during the past 40 years.

Discuss your street paving or maintenance problem with a Texaco representative, who is an Asphalt specialist. His knowledge and experience are at your service, without placing you under any obligation. Write our nearest office.

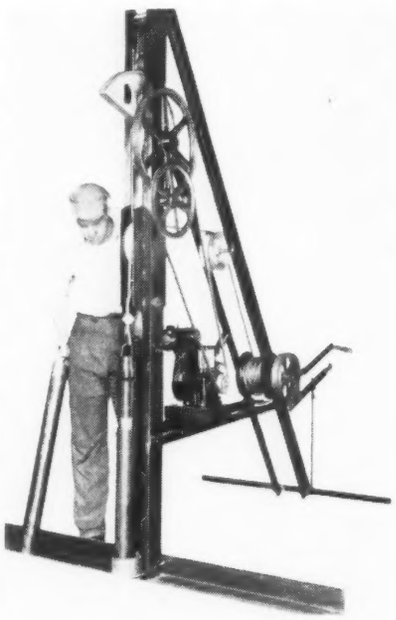
THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

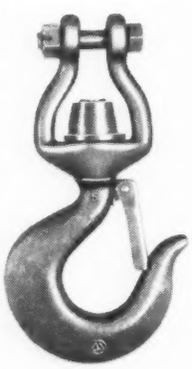
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

TEXACO ASPHALT

WELL DRILLER—New machine has 6x6-ft. base and is 8 ft. high and weighs 450 lb. Drill bit weighs over 125 lb. and will drill hole suitable for sinking 4-in. casings. Distance of drop of drill is adjustable to meet ground conditions encountered. Driller is operated at 38 strokes per minute and is equipped with automatic feed out device which permits cable to feed out freely as drill progresses down. Approximate drilling rate varies upward from 4 to 6 in. per hr. in quartz to 24-in. in sand and clay. It operates on ½ or ¾-hp. electric motor or small gasoline engine.—**Consolidated Industries, 9 S. Colony St., Wallingford, Conn.**





SWIVEL HOOK ASSEMBLY — New hook comes in ½ and 1-ton sizes and is recommended for cranes and hoists or lashing applications where safety is important consideration. No machining is required for installation; it is only necessary to unbolt present load hook swivel assembly and bolt on new one. It features improved safety latch on conventional styles of hoist hooks which leaves 80 percent of regular throat opening and which will not open until operator releases latch with his fingers. Graphite-impregnated bronze washer under nut assures easy swivel action and heat-treated alloy swivel bolt gives maximum strength and long life.—**Thomas Laughlin Co., Portland, Me.**

OFF-HIGHWAY TRUCK — New four-wheel heavy-duty Model KBR-14 has gross vehicle weight rating range of 32,000 to 41,600 lb. and is specially designed for use in strip mining, logging, construction, oil field, quarry and similar off-highway types of service as truck-tractor or

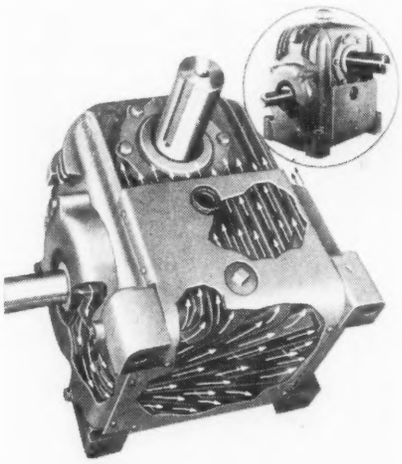
straight truck. It is available in three wheelbases, 161, 179 and 215 in. with cab-to-axle dimensions of 72, 90 and 126 in., respectively, and is powered by six-cylinder International-Continental R-6586 valve-in-head engine. Maximum brake horsepower is 200 at 2,600 rpm., with maximum torque of 475 ft.-lb. at 1,000 rpm.—**International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

CONCRETE PRIMER — Designed specifically for use on concrete structures, Southport No. 601 primer is said to effectively prevent absorption of external water from any source while allowing internal water to escape as vapor. It is suitable for brush or spray application, is highly pigmented, slightly off-white or near gray in color, and may be thinned. Companion material is No. 602 finisher, white in color and of brush and spray consistency, designed to protect primer from weather.—**Southport Paint Co., Inc., Savannah, Ga.**

CURVE DRAWING INSTRUMENT —Infinarc, new device for drawing curves, is available with 12-in. base and four preformed wire curves with which it is possible to produce almost any shape desired, including

reverse curves. Wires are easily and quickly interchanged by snapping loops over ends of adjustment screws. It is made entirely of stainless steel and comes in clear-lacquered wood instrument case.—**Cook Specialty Co., Green Lane, Pa.**

SPEED REDUCERS—Line of scientifically designed fan-cooled speed reducers is available in sizes of 4, 5, 6 and 8-in. center distance, with reduction ratios of from 5:1 to 70:1. Removable shields direct fan impelled air over finned lower portion

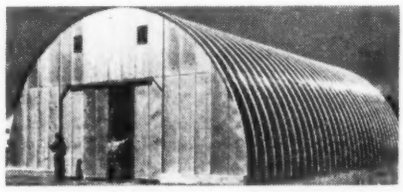


of housing so that equalized airflow is obtained at all points requiring cooling. Fins are so located and shaped as to guide air streams for maximum cooling efficiency. Shields can be removed to clean housing or for removal of impeller. Fan is attached to standard pinion shaft. Housing for 8-in. reducer, with 13.1-hp. rating at 1,750 rpm. (70:1) is 29 in. high, 16⅝ in. wide and 21⅝ in. across.—**Cone-Drive Division, Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich.**

ELECTRODE—Improved Airco No. 312 is all-position, mild steel electrode for use with a.c. and d.c. reverse polarity current. Preheating is no longer required to obtain porosity-free weld deposits. These deposits can be obtained by using either stringer bead or full weave technique. Weld metal has extreme low hydrogen content.—**Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.**

PREFABRICATED BUILDING — Alumni-Drome, standardized, unit-type, arch-roof, all-aluminum, self-supporting building, is suitable for service as machine shop, storage shed, warehouse, garage and similar industrial uses. Standard size is 36x60 ft., but it employs standardized 6-ft. sections which allow length

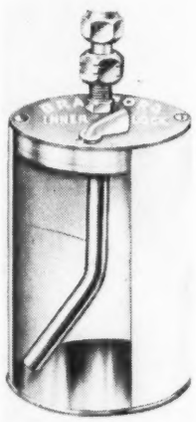
(*Continued on page* 150)



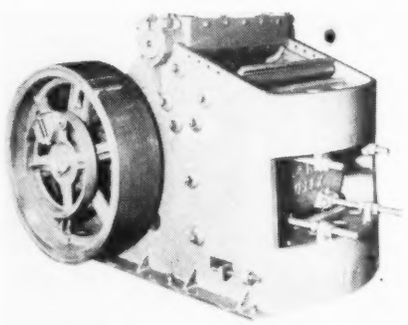
(*Continued from page* 148)

to be varied as desired. Being entirely of aluminum, individual arch sections can easily be raised into position after assembly on ground. They are anchored to concrete foundation extending 1 ft. above ground level. Longitudinal members lock into arches to form strong rigid structural framework. After frame is erected, sheathing sheets are attached to ends and curved barrel sections. These sheets are flanged at both sides to turn up into hat-shaped channels which bolt down to framing members. Sheet ends fit into tight S-type locking members. Main arches are spaced at 6-ft. intervals, intermediate framing at 2-ft. intervals to receive 2-ft. wide sheathing.—**Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.**

PAINT - SPRAY SYSTEM — New instant change inner - locking spray head can be attached to any suction type gun and permits instant changing of disposable paint cups containing different colors or types of finishes. Patented device, at flick of thumb lever, firmly locks head to disposable rigid, metal-bottom paper paint cup. Self-sealing lids protect cups when not in use.—**Bradford Products Co., 2021 Cass Ave., St. Louis 6, Mo.**

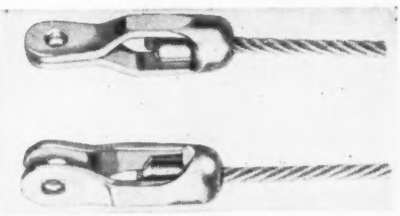


ROCK CRUSHER—Kue-Ken Simplex is lightweight, large capacity crusher with ability to produce ¾- or 1-in. sizes of hardest rock with low power requirements. Requiring lubrication only once every 6 months,



16,500-lb. machine has 36x10 or 36x12-in. jaw opening. Speed is 350 to 365 rpm. and capacity is 40 to 50 tph. at ¾-in. setting and 50 to 60 tph. at 1-in. setting. Maximum hp. requirement on hard rock is 40.—**Straub Mfg. Co., Inc., 507 Chestnut St., Oakland, Calif.**

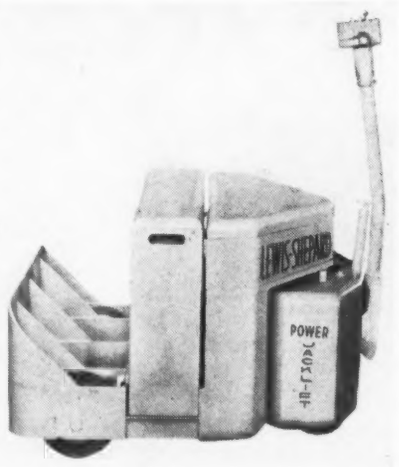
CABLE TERMINALS—"Socketype" cable terminals consist of alloy steel cadmium-plated eye or fork type fitting, plus stainless steel sleeve for swaging to cable. They are available loose or attached to rope in complete



cable assembly to specification length. It is said that these terminals save cable, allow cable to swivel freely when load-free which eliminates kinking. They provide safe, smooth, foul-free installation.—**Macwhyte Wire Rope Co., Kenosha, Wis.**

SAWS—Two new saws have blades of high carbon electric hearth steel and handles of Celanese Lumarith (cellulose acetate). Larger, or skewback, saw carries conventional-shaped circular handle, grooved for steady grip. Smaller compass saw has removable blades, held in place with two large setcrews, and revolver-type handle. — **Great Neck Saw Mfrs., Inc., Mineola, N. Y.**

JACK TRACTOR UNIT—Built to tow trailer trains, JackTractor may also be used as pushing unit. It is powered by 6,000-lb. capacity Power JackLift master drive unit and has maximum drawbar pull of 500 lb. Any standard type towing hitch or special type hitch will be supplied. Vertical handle operation allows any controls to be operated with handle in vertical as well as in all other



positions. Brake control, two-speed control, forward and reverse control, raising and lowering controls and horn and lock switch, all electrically operated, are in handle head for easy access. — **Lewis-Shepard Products, Inc., 297 Walnut St., Watertown 72, Mass.**

Cantilevers and Tubular Columns Make Possible Unusual Design

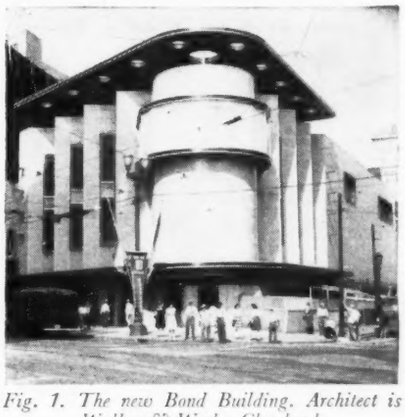


Fig. 1. The new Bond Building. Architect is Walker & Weeks, Cleveland.

By William B. Miller, C. E.
Cleveland, Ohio

THE architectural design of the new Bond Building (Fig. 1), erected on a downtown corner in Cleveland, makes use of cantilevers and some tubular columns. Arc welding was called upon frequently in fabricating the unusual structural forms.

A continuous, saw-tooth ground floor show window plan extends, unobstructed by any exterior columns, around both street sides, over which is a continuous marquee. The marquee and exterior portion of the 3-story building are supported by means of cantilevers from the main interior columns.

Fig. 2 is a sectional sketch of the cantilever construction over the show window. The 18″ x 20″ plates connecting the hanger and the wind bracing (labeled "A" in the sketch) were position welded in the fabricating shop, and the angle hangers were field welded to this plate with $\frac{3}{8}$″ fillet welds after the marquee cantilevers were aligned. "Fleetweld 5" electrode was used for all welding on this job.

To give the marquee a slight upward slant (exaggerated in Fig. 2), the main marquee cantilever beams were bent in the shop by flame-cutting part-way through at point "B", bending, then welding the triangular gap, reinforcing the bottom flange with a welded splice plate. The top flange was not cut in order to facilitate fabrication.

As can be seen in Fig. 1, the corner of the building above the marquee line is rounded and extends over the main entrance. Tubular columns are used in this rounded corner to facilitate fabrication of beams framing radially and tangently into the columns. Fig. 3 is a portion of the corner bay on the third floor, showing radial cantilever beams which are shop-fabricated by coping out, bending and welding.

Fig. 3. Cantilever beams in corner bay at third floor level.

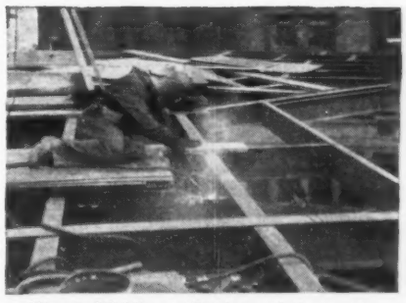


Fig. 4. Welding soffit plates of the canopy.

The clean-cut lines of the marquee and the decorative canopy over the top of the building were made possible by arc welded fabrication. The canopy frame is constructed entirely of steel using 10″ I beams of various weights to give a flush surface top and bottom. Top plates $\frac{1}{4}$″ thick and soffit plates $\frac{3}{16}$″ thick were attached to this frame by welding. The soffit plates, erected first, were tightly clipped to the I beam flanges with stud-welded clips, then arc welded to the flange from above (Fig. 4).

After the soffit plates were completely welded, the deck plates were positioned, tack welded and continuously welded to the I beams, the weld metal filling in the $\frac{1}{4}$″ gap between plates and making a watertight job. The joints between the soffit plates were then welded continuously (Fig. 5). The welds were ground to a smooth flush surface. The open rings in the canopy were shop-fabricated by forming $\frac{3}{8}$″ plate into a cylinder and fillet welding it to cut-out top and bottom plates.

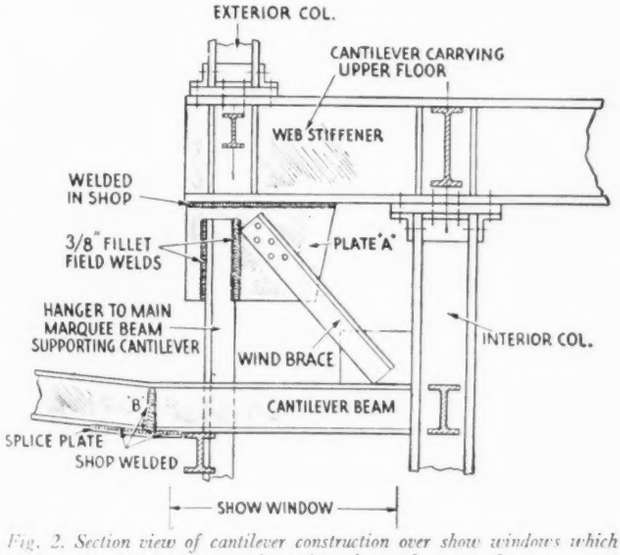


Fig. 2. Section view of cantilever construction over show windows which supports marquee and exterior columns for upper floors.

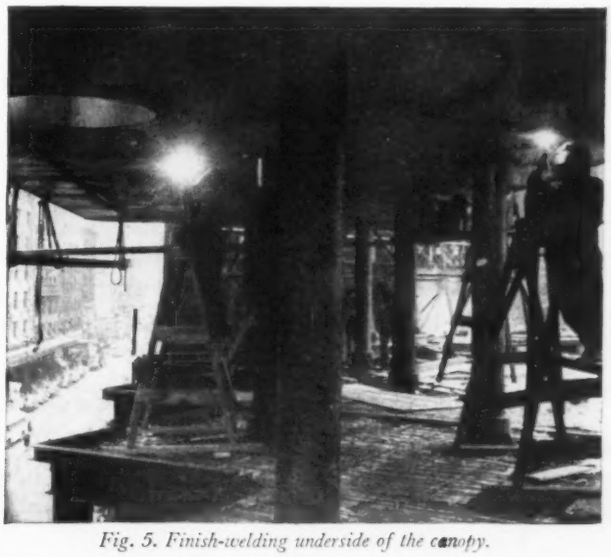


Fig. 5. Finish-welding underside of the canopy.

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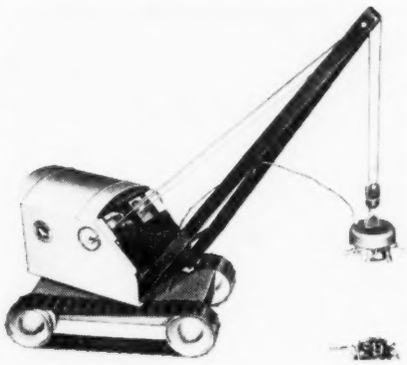
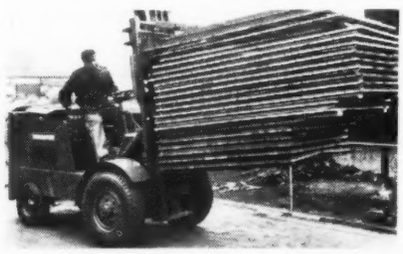
CONSTRUCTION TOYS—Sturdybird crane and Sturdybird electromagnetic hoist are designed as customer Christmas gifts for companies in field of construction. Both toys are 31 in. long, of welded steel, with cabs that swivel completely around and run on wide molded rubber



treads. Booms hoist and lower and hoist drums are complete with quick-action clutches. Crane has clamshell grab bucket that digs, drags, loads and unloads. Hoist has powerful battery-operated steel-cased magnet that lifts 10 lb. and drops load at flick of switch. Company name can be stenciled on toys, which are finished in bright colors.—**Tech-Art, Inc., Milford, Ohio.**

SAW RIG—Portable saw rig, small enough to go through ordinary doorway, cuts full 2-in. lumber. Blade protrudes 2½ in. through top of table. Heavy-duty mandrel is connected through multiple V-belt drive to single-cylinder, four-cycle air-cooled gasoline engines. Several different sizes of engines and electric motors are available.—**Sterling Machinery Corp., 411 Southwest Blvd., Kansas City, Mo.**

FORK LIFT TRUCK ACCESSORY—Clamp arm attachment prevents shifting or slipping of large, flat loads while being transported or stacked. It consists of set of clamp arms hydraulically operated to grip



load. Action is controlled by valve adjacent to operator. Both arms are equipped with layer of sponge rubber along bottom edge which assures positive, firm grip without marring or otherwise damaging materials.—**Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.**

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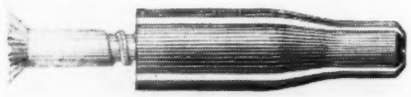
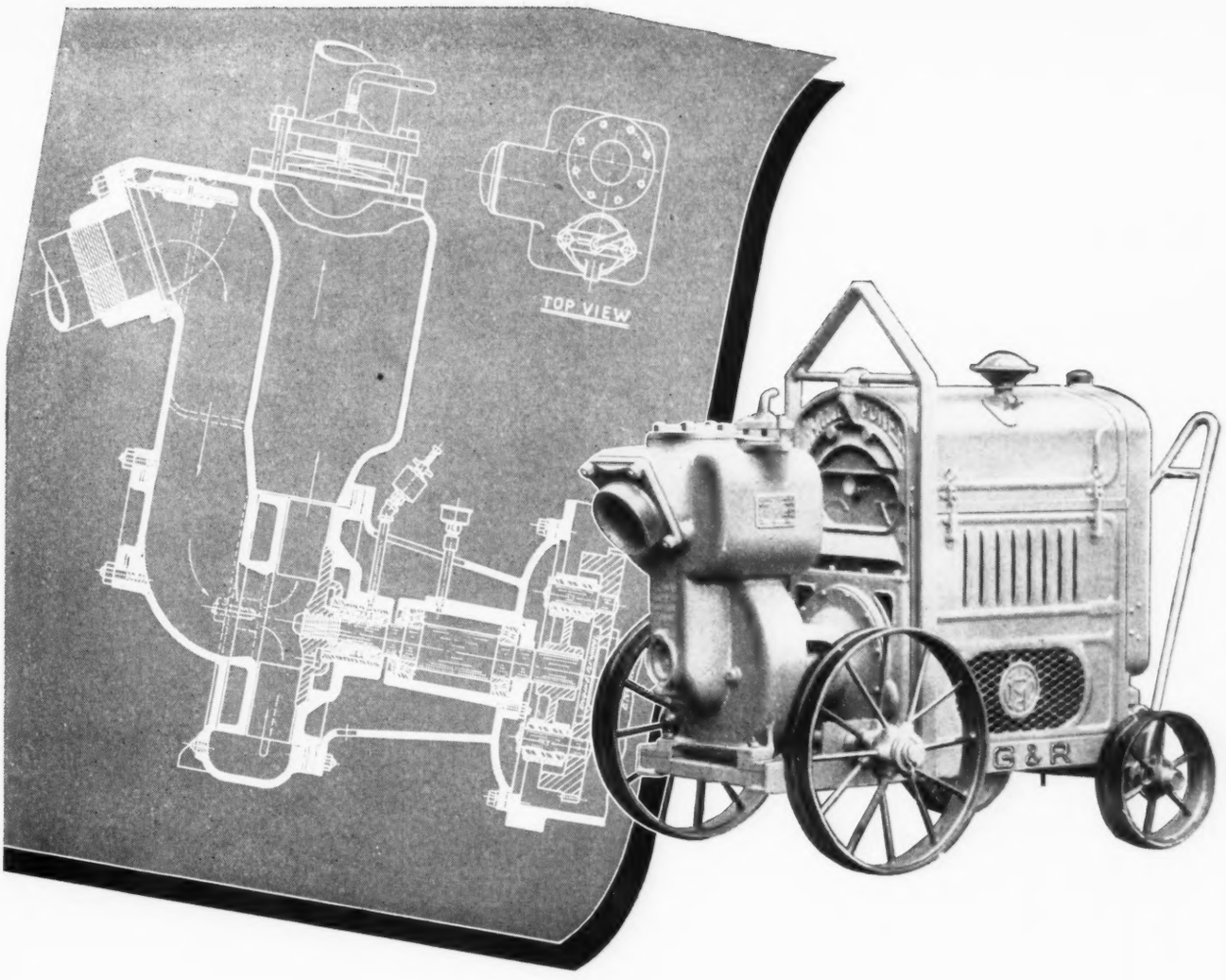
SCREW ANCHORS—Sandscott plastic expanding anchors are said to simplify anchoring, reduce costs and assure tremendous holding power. They may be used with wood screws or lag screws for fastening to any material. Overlapping internal and external slits give "concertina" expansion. This feature permits anchor



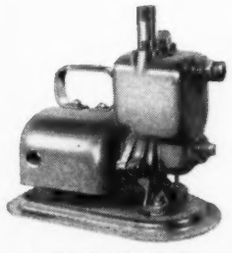
to compress itself and toughness of plastic enables it to be driven into tight hole, thereby getting every fraction of holding power when screw expands anchor. In pull-out tests, maximum load pull was 2,965 lb. using No. 20 screw. Anchors are available in seven sizes in various lengths to accommodate all lengths in screw sizes, ranging from No. 5 to No. 20, or ¼-in. and 5/16-in. lag screws.—**Holub Industries, Inc., Sycamore, Ill.**

INDUSTRIAL ROOFING—Lightweight, heavy duty aluminum roofing material is specifically adapted to factories, warehouses, storage depots, hangars and similar structures. Combining high strength, high resistance to industrial atmosphere, minimum maintenance and reduced roof load, roofing has covering width of 32 in., allowing for side lap of 1½ corrugations. It comes standard 5-ft. through 12-ft. lengths, .032 in. thick. Siding, of same alloy and lengths as roofing, is also in production.—**Aluminum Co. of America, 801 Guild Bldg., Pittsburgh 19, Pa.**

BLOWPIPE—Designed for use with manufactured or natural gas, propane and compressed air on heating, annealing or soldering operations, new C-47 Weldimatic blowpipe, of special aluminum alloy, adds to original Weldit pipe advantages of light weight, increased capacity and improved balance and grip. It cuts air and gas cost by automatically reducing flame to small pilot light during idle moments. Longer lever provides for easy flame control.—**Weldit, Inc., 990 Oakman Blvd., Detroit 6, Mich.**



MR. CONTRACTOR:- *The real story of pump value is found by examining the inside.*



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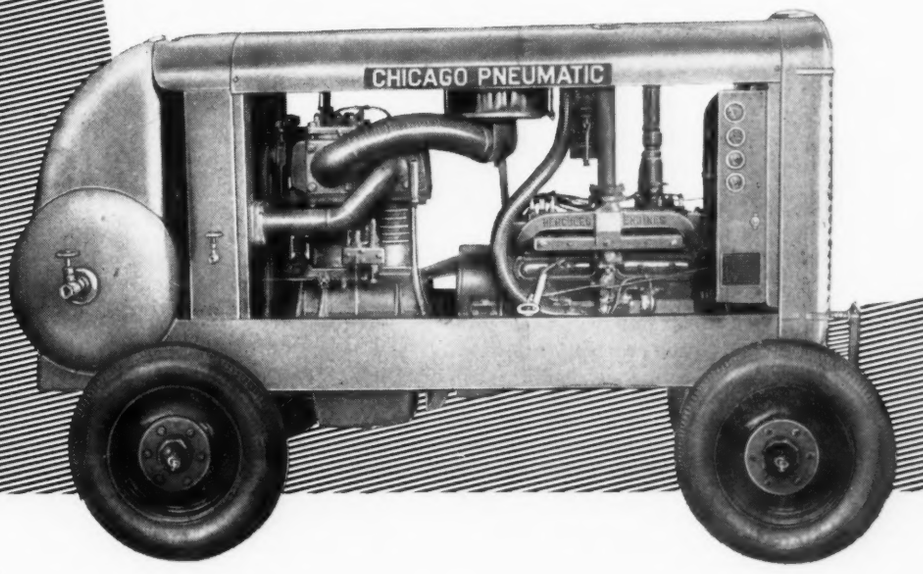
RADIAL SAW—Raydol Woodworker features one-piece arm-column base; automatic position finders; perfect balance in all positions; frictionless carriage; completely inclosed motor; fewer parts; portability. Column-arm structure can be fed forward on base plate by control on front panel, allowing cutting tool to be moved up to material, thus using full capacity without moving

(*Continued on page* 160)

Engine speed of **CP Portable Compressor** *is synchronized with air demands*



On the CP Portable Compressor, the gradual speed regulator automatically synchronizes the engine speed to variations in air requirements. Whenever the air demand slackens, the speed is correspondingly reduced.

This and other CP features effect fuel savings of 15% to 35%, and also minimize maintenance costs.

CP gasoline-driven compressors range from 60 to 315 c.f.m.; CP Diesel-driven compressors from 105 to 500 c.f.m. Write for full information.

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(*Continued from page 158*)

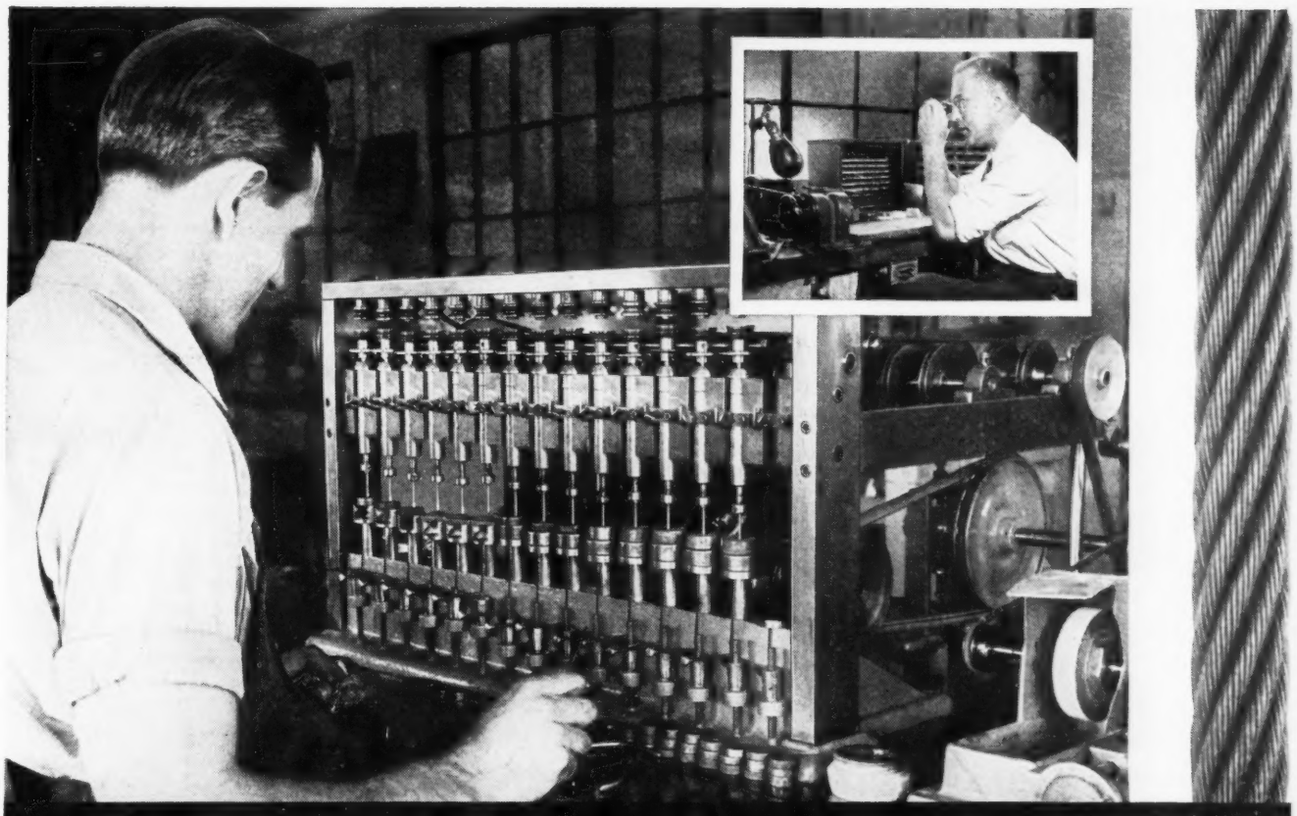
guide strip. Compact design of motor allows use of cutting tools to within 2½ in. of center of arbor. Specifications are: Cut-off—16 in. (22 in. with column feed); depth of cut—2½ in. with 10-in. blade, 1½ in. with 8-in. dado; rip—27½ in. maximum; arbor—¾ in. dia. 1⅝ in. long; motor—1 hp., 3500 rpm. for single phase 110 or 220 v. a.c.—**Cottom Engineering Corp., Bartlett, Ill.**

SNOW PLOW WAX—Penn Drake wax, easily applicable to moldboards, blades and wings, creates hard, slick surface off which even wettest snow slides easily. It is applied with ordinary paint brush. One

gallon of wax covers about 300 sq. ft. of plow working surfaces. It also acts as rust preventive. Plow can be placed in service within few minutes after application.—**Pennsylvania Refining Co., 2686 Lisbon Rd., Cleveland 4, Ohio.**

GLASS BLOCK INSTALLATION—Hydrocide 600 is recommended by company for preparation of surface before setting glass blocks. This emulsified asphalt prevents etching of block by lime present in adjacent masonry. Another product, Hydrocide powder, can be mixed with mortar in which block is set to secure maximum resistance to water and tighter adhesion to block. This powder coats sand with water-insoluble calcium stearate, lines internal pores and capillaries of mortar and imparts increased resistance to water absorption as well as dimensional stability to finished mortar. Kaukit, elastic non-hardening caulking and glazing compound, is used for finishing surface of joints.—**L. Sonneborn Sons, Inc., 88 Lexington Ave., New York 16, N. Y.**

CONDUIT HANGER—This hanger is said to guarantee solid non-slipping support with great strength. Pointed case-hardened, cup setscrew through threaded hole holds conduit firmly. Foot portion is slightly hollowed at center, permitting resulting ridges to grip pipe at four different places.—**Efficiency Electric & Mfg. Co., East Palestine, Ohio.**



These 'Drill Masters' Develop Precision in Wickwire Rope

The workability and durability of wire rope is largely dependent upon accurate coordination of each wire in the rope. Because off-size wire can cause excessive friction and internal rope wear and early failure in service, every wire must be perfect in shape to fit into the exact geometric construction pattern of the rope.

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RADIANT PANEL HEATING—(40-p. bulletin) Contains non-technical discussion of radiant panel heating designed to furnish architects, engineers and heating contractors with sufficient background to compare this method with other types of heating systems.—**Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.**

NICKEL ALLOY—(36-p. booklet) Gives detailed information on physical and mechanical properties of Ni-Resist. Performance under wide variety of industrial conditions involving corrosion, heat and wear is described. Corrosion data for 400 corrosive media are presented in tabular form.—**International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.**

FIRE PROTECTION—(4-p. folder) Summarizes contribution of Vermiculite to fire protective construction. Included are descriptions of recently conducted tests on vermiculite plaster used to fireproof steel beams and columns.—**Universal Zonolite Insulation Co., 135 S. La-Salle St., Chicago 3, Ill.**

WELDING FOR EQUIPMENT SALVAGE—(8-p. technical bulletin) Describes specific procedures involved in industrial equipment salvage welding with various gas and arc rods for producing hard overlay at low temperature. Several interesting new alloys for hard overlay process are featured in charts, data and photographs.—**Eutectic Welding Alloys Corp., 40 Worth St., New York 13, N. Y.**

Hermitage Cements

IN THE SOUTHERN TRADITION

Early this year, on completion of an extensive modernization program, we announced a vastly improved line of Hermitage Cements . . . products made exclusively with top-grade limestone from our new quarry at Martha, Tenn. . . . products whose quality is unsurpassed anywhere.

To keep pace with these technical improvements . . . to make our modernization program truly complete . . . we decided to redesign our packages, too—even though it meant the retirement of a trade mark we'd been using ever since Hermitage was founded.

The familiar figure of "Old Hickory," which has identified all our packaged products in the past is being replaced by a distinctive modern design—a new, improved package far more in keeping with the matchless Hermitage Cements we offer you today.

The picture of "Old Hickory" is gone, but the name "Hermitage" means more than ever before.

Hermitage Portland Cement Company

AMERICAN TRUST BUILDING • NASHVILLE 3, TENNESSEE

Hermitage Cements

PORTLAND—HIGH EARLY STRENGTH—AIR ENTRAINING—MASONRY

DID YOU SEE THAT ERROR?

DON'T BELIEVE IT!

MultiFoote 34-E Duo Mix (Dual Drum) Paver with elevating boom loading to a pumpcrete.

MULTIFOOTE ELEVATING BOOMS CLEAR 20 FT.!

A recent Foote Company ad got through with a typographical error saying that the MultiFoote elevated boom would clear 8½ ft. It isn't so! MultiFoote standard elevating booms will clear 18½ to 20 ft. and there are MultiFoote elevating booms in service, of special design, that will clear much more.

- 18½ to 20 ft. clearance.
- The only elevating boom proved in years of service.
- Bucket is adjustable to boom angles.
- All bucket operating mechanism is outside bucket.

Here is the elevated boom you need, a boom with real field experience of several years behind it. Available on 27-E Pavers, 34-E Single Drum Pavers and the 34-E Duo Mix—the big, fast MultiFoote Dual Drum Paver. Ask our sales agents for details.

THE FOOTE COMPANY, INC.
1910 State Street Nunda, New York

Builders of Adnun Blacktop Pavers, MultiFoote Concrete Pavers and Foote Kinetic Mixers

MULTIFOOTE CONCRETE PAVERS

ADNUN BLACKTOP PAVER

EQUIPMENT MEN

and Their Companies

William F. Weimer, for the last several years assistant advertising manager of the Rockwell Manufacturing Co., Pittsburgh, Pa., has been named advertising manager of the company's Pittsburgh Equitable Motor Division.

Laird A. Hanson has been appointed supervisor of parts and service merchandising for the International Harvester motor truck division. He has been manager of the motor truck branch at Wichita, Kan.

Raybestos-Manhattan, Inc., recently announced the following appointments in its equipment sales division: **Harry C. Dishman,** equipment sales manager with headquarters in Detroit; **George T. Young,** branch manager of the Detroit office; **E. E. Juergens,** branch manager of the Cleveland office; and **John E. Cole,** branch manager of the Chicago office.

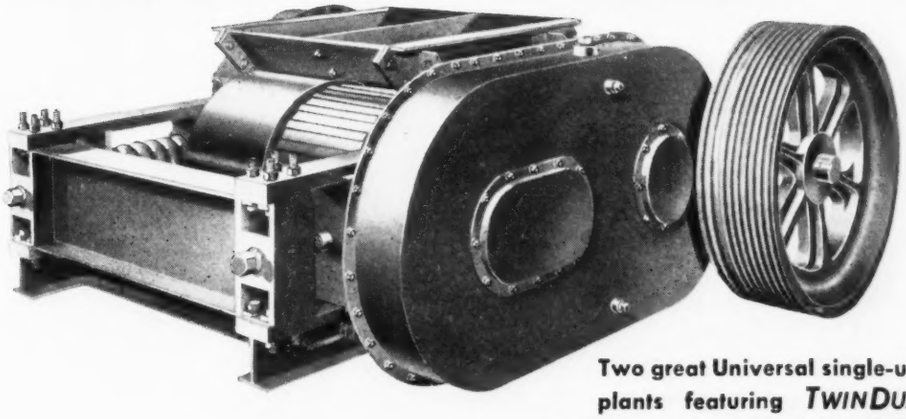
Robert J. Barry is manager of the brokerage department of Hetz Construction Co., Niles, Ohio. He has had long engineering administrative and production experience, including 15 years with Remington Rand as industrial engineers.

Nail production at the American Steel & Wire Co., U. S. Steel subsidiary, is being maintained at a very high rate. About 150 carloads —over a billion nails—are leaving the mills every week. There are over 1,100 different types and sizes of nails in this output.

More than 90 percent of all eligible employees of Masonite Corp., Chicago, Ill., have joined the company's contributory group pension plan recently established. The objective is to give the retired worker at least half his average pay, including social security benefits.

These regional sales managers of the pigment department of Calco Chemical division, American Cyanamid Co. have been appointed: New York City, **Elmer Curling;** Cleveland, Ohio, **S. F. Dimlich;** Chicago, Ill., **K. A. Coates;** and San Francisco, Calif., **L. C. Green.**

UNIVERSAL *TWINDUAL** ROLLS



Two great Universal single-unit portable plants featuring *TWINDUAL** ROLLS

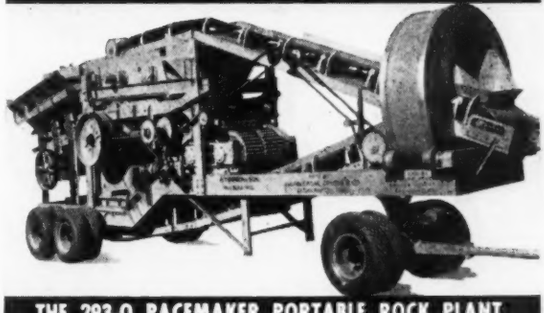
*TWINDUAL** METHOD OF SECONDARY REDUCTION COMBINES TWO STAGES OF ROLL REDUCTION IN ONE UNIT

Universal *TWINDUAL** ROLLS provide the approximate capacity of two separate roll crushers. You get all the advantages of two-stage secondary crushing operations without the bulk and weight. This exclusive Universal unit doubles primary capacity and reduces jaw wear by permitting 100% wider jaw discharge opening. That's why *TWINDUAL* ROLLS when combined with the world famous Universal overhead eccentric jaw crushers are marking a new era in complete single unit dual portable crushing plants. Smaller primary jaw crushers can be used to gain savings in weight, space and initial cost . . . yet capacity is increased. Two popular Universal portable plants featuring *TWINDUAL* ROLLS are shown here.

*Patented

MORE YARDS PER HOUR
LESS COST PER YARD
WITH UNIVERSAL

THE *TWINDUAL MASTER PORTABLE GRAVEL PLANT**
Bulletin No. 682



THE 293-Q PACEMAKER PORTABLE ROCK PLANT
Bulletin No. 31A

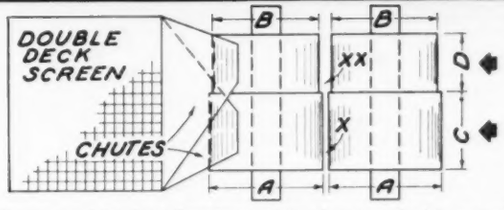


Diagram of feed of *TWINDUAL* Rolls showing double set of rolls which provide two stages of secondary reduction. In operation, crushed material from the primary breaker together with a percentage of material which does not require primary reduction passes over double deck screen. Oversize retained on the top deck is received by the small diameter rolls for coarse crushing. Following this stage of reduction material passes to bottom deck of screen. Rejects are chuted to the larger diameter rolls for the final stage of reduction.

UNIVERSAL ENGINEERING CORPORATION

327 EIGHTH STREET, N. W. CEDAR RAPIDS, IOWA

ENGINEERS AND BUILDERS OF "STREAM-FLO" ROCK, GRAVEL, AND LIME PLANTS—SCREENING AND WASHING PLANTS—CONVEYORS—APRON FEEDERS

Goodyear Tire & Rubber Co.'s mechanical goods division reports these sales organization shifts: **R. E. Pauley,** district manager at Pittsburgh, Pa., becomes sales manager of the molded goods plant at St. Marys, Ohio, being succeeded by **Robert B. Warren,** who has been eastern railroad sales manager at New York; **Howard T. Martin** has been named district manager of mechanical goods sales at Dallas, Tex.

Robert R. Boyle has been named division superintendent of Goodyear Tire & Rubber Co.'s tire plant at Buitenzorg, Java. Goodyear got its Java factory back several months ago after losing it to the invading Japs in 1942. The plant has been rehabilitated and is in production.

Detroit Diesel Engine division of General Motors Corp. has assigned **Lauren H. Wells** as sales engineer for the Northern Pacific Coast Zone, and **Victor Hansen** will take over the southern west coast zone.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946

Of Construction Methods published Monthly at New York, N. Y., for October 1, 1947.

State of New York } ss.
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared J. A. Gerardi, who, having been duly sworn according to law, deposes and says that he is the Secretary of the McGraw-Hill Publishing Company, Inc., publishers of Construction Methods, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily, weekly, semiweekly or triweekly newspaper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (section 537, Postal Laws and Regulations), printed on the reverse of this form, to wit:

1. That the name and address of the publisher, editor, managing, editor, and business manager is: Publisher, McGraw-Hill Publishing Company, Inc., 330 West 42nd St., New York 18, N. Y.; Editor, Waldo Bowman, 330 West 42nd Street., New York 18, N. Y.; Managing editor, Robert K. Tomlin, 330 West 42nd St., New York 18, N. Y.; Business manager A. E. Paxton, 330 West 42nd St., New York 18, N. Y.

2. That the owner is: McGraw-Hill Publishing Company, Inc., 330 West 42nd St., New York City. Stockholders holding 1% or more of stock: James H. McGraw, 330 West 42nd Street, New York City; James H. McGraw, Jr., 330 West 42nd Street, New York City; James H. McGraw, Jr., Curtis W. McGraw and Willard T. Chevalier, Trustees for: Harold W. McGraw, James H. McGraw, Jr., Donald C. McGraw, Curtis W. McGraw all of 330 West 42nd Street, New York City; Edwin S. Wilsey and Curtis W. McGraw, Trustees for James H. McGraw, 3rd, Madison, New Jersey, Curtis W. McGraw, 330 West 42nd Street, New York City, Donald C. McGraw, 330 West 42nd Street, New York City, Mildred W. McGraw, Madison, New Jersey, Grace W. Mehren, 536 Arenas St., La Jolla, Calif.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

J. A. GERARDI, Secretary.

McGRAWHILL PUBLISHING COMPANY, INC.

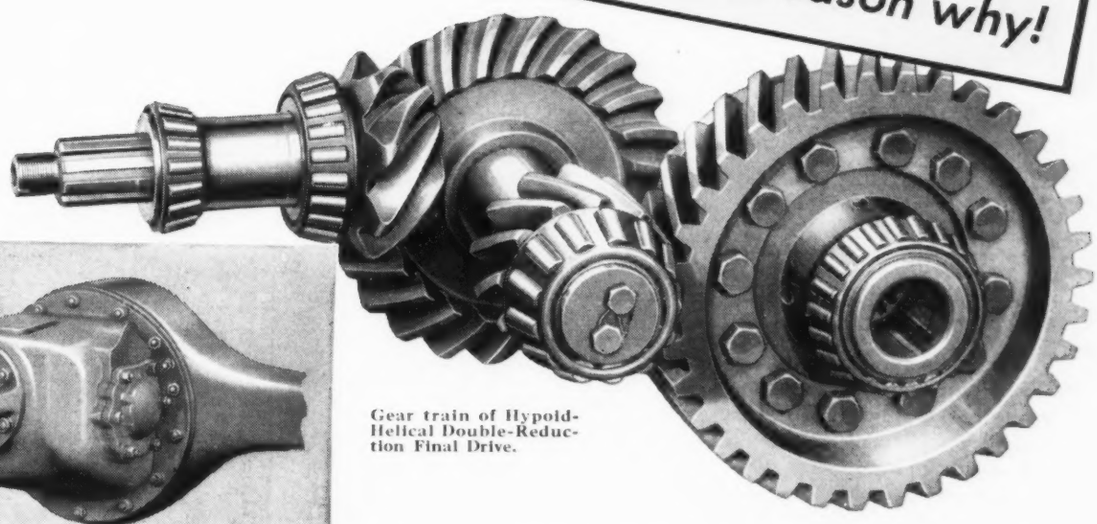
Sworn to and subscribed before me this 26th day of September, 1947.
[SEAL] ELVA G. MASLIN
(My commission expires March 30, 1948)

HYPOID-HELICAL DOUBLE-REDUCTION FINAL DRIVE

TIMKEN 3 for 1 AXLES

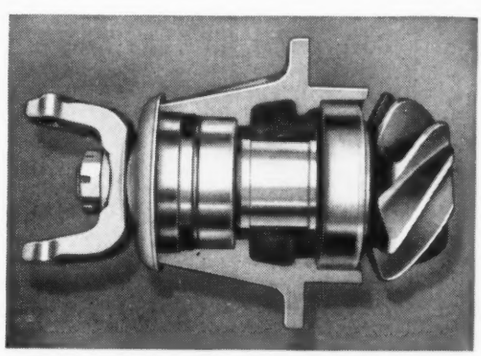
THE FINAL ANSWER TO FINAL DRIVE PROBLEMS

Another reason why!



Gear train of Hypoid-Helical Double-Reduction Final Drive.

Hypoid-Helical Double-Reduction Final Drive (medium- and light-heavy-duty series)—carrier mounted to housing.



Hypoid pinion bearings mounted in removable pinion cage (cage shown cut away). Bearing adjustment is obtained by a selected thickness spacing washer which is hardened and ground.

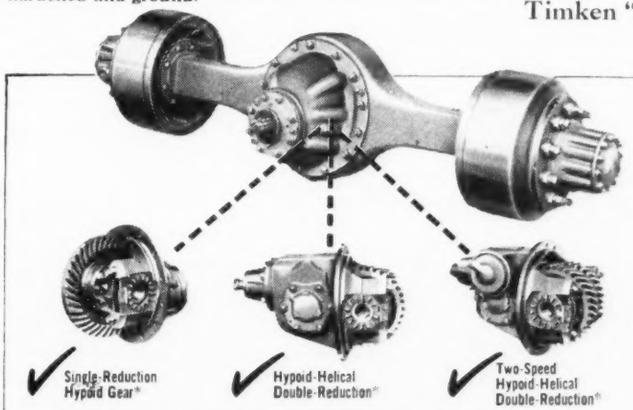
Why are vehicle manufacturers, dealers and operators unanimous in praising Timken "3 for 1" Axles as the final answer to final drive problems?

There are many reasons: Timken Advanced-Related Design—interchangeablity of final drives and parts—low maintenance.

Take, for example, this Timken Hypoid-Helical Double-Reduction Final Drive. Here are a few of its design features:

- **Hypoid gear and pinion for first gear reduction.**
- **Wide-faced helical gear and pinion for second gear reduction.**
- **All bearings adjustable.**
- **Symmetrical differential cases machined from steel forgings of generous proportions, providing rigid support for helical gear.**
- **Helical pinion integral with cross-shaft.**
- **Large diameter cross-shaft for rigidity.**
- **Shim adjustment of cross-shaft bearings. Shim adjustment for positioning of hypoid pinion with gear.**
- **Differential carrier legs supported in the axle housing.**

If you want the only postwar axles of Advanced-Related Design, look under the next new trucks you buy! Specify Timken "3 for 1" Axles.



✓ Single-Reduction Hypoid Gear*

✓ Hypoid-Helical Double-Reduction*

✓ Two-Speed Hypoid-Helical Double-Reduction*

*INTERCHANGEABLE IN SAME AXLE HOUSING USING THE SAME AXLE SHAFTS

TIMKEN 3 for 1 AXLES

THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN
WISCONSIN AXLE DIVISION, OSHKOSH, WISCONSIN
TIMKEN AXLE BRAKE DIVISION, DETROIT, MICHIGAN

Progressive Welder Co., Detroit, Mich., has acquired the Warren Alloy and Machine Co. of Warren and Detroit, Mich., which has been operating a non-ferrous foundry in the former city and a jig, fixture, die, gage and punching unit in the latter city. The plants will be operated as separate divisions under the name of the Warren Alloy & Machine division.

At a recent meeting of the board of directors of the Sterling Engine Co. of Buffalo, **James B. Porteus** of Bronxville, N. Y., was elected to the board and named president. Mr. Porteus, who succeeds **Addison F. Vars,** was formerly with the Westinghouse Electric International Co. in charge of distribution in Brazil and subsequently in northern Latin America. Mr. Vars was elected chairman of the board of directors. **George M. Ebert** continues as executive vice-president and comptroller. The Sterling Engine Co. manufactures diesel and gasoline engines for marine and industrial use.

American Nickeloid Co., Peru, Ill., manufacturers of pre-plated metals, has opened a New England sales office at Beverly, Mass., in charge of **J. F. Schoellhorn,** formerly at the Chicago office.

Shop-Fabricated Forms

(*Continued from page 93*)

tion season, last year, this carpenter shop was a beehive of industry —with the carpenter crew averaging 20 men.

Simplified Field Erection

Each of the hundreds of sections of forms, all made of 2-in. facing lumber with 2x6 and 2x8 reinforcing ribs, were fabricated with care and to close tolerances. Results were gratifying in that the usual problems of fitting such prefabricated forms together at the bridge site were practically non-existent. Moreover, forms were reused as many as three times.

In general, the forms for the bridge substructure were made in modular sections 4 ft. high and about 6 ft. long. Each section was stenciled to show its exact position in the structure and the order of its erection. This procedure alone saved many man-hours at the bridge site.

Fast Delivery Schedule — Production within the carpenter shop was geared to such a rapid tempo that delivery of finished form panels was a major item. The carpenter shop, located in a narrow gorge in the mountains, offered virtually no storage space and none was wanted as the entire operation was planned for a minimum handling of forms.

A construction platform 40x60 ft. was built adjacent to one end of the carpenter shop, at floor level, which was about truck-bed height. As form sections were completed, they were shunted out onto this platform and loaded into trucks with a 3-ton Sasgen stiffleg derrick. Loading runways were graded out on each side of the platform to handle two lines of trucks. The hand - operated stiffleg derrick, equipped with a 40-ft. boom, could reach forms stacked any place on the platform for loading onto the trucks.

Both the efficient layout of the carpenter shop and the refinement of fabrication enabled production of forms to be kept on schedule at all times, lessened the amount of form-fitting at the bridge sites, and resulted in net savings to the contractors.

CLYDE GASOLINE HOISTS

Engineered to do your job, fast, safely and economically . . .

. . . that is the story behind every Clyde gasoline hoist.

The illustrations show one of the new, low cost 15 H.P. Frame 3 hoists, handling materials on the construction of a 125 foot grain storage silo at Owosso, Michigan.

It's ruggedness of construction—yet light weight are features that make it especially desirable to the contractor who wants portability as well as dependability.

Simplicity of design means better performance at all times . . . no frequent or delicate adjustments required to maintain full hoist efficiency.

Why not consider the advantages of a Clyde Frame 3 hoist on your next job. Write for complete information—just mention Catalog No. 7622.

CLYDE QUALITY EQUIPMENT

GASOLINE HOISTS	ELECTRIC HOISTS
STEAM HOISTS	BELT HOISTS
CAR PULLERS	HAND POWERS
STEEL DERRICKS	TIMBER DERRICKS
WHIRLEYS	ROLLERS

Manufactured by

CLYDE IRON WORKS, Inc.
Duluth 1, Minnesota
Subsidiary of Barium Steel Corp.

Advertisers in this issue

(Continued on page 176)

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** : EQUIPMENT : (Used or Resale)

UNDISPLAYED —RATES— DISPLAYED

90 cents per line minimum 4 lines. To figure advance payment count 5 average words as a line.
Positions Wanted (full or part time salaried employment, only) ½ the above rates payable in advance.
Box Numbers—Care of publication New York, Chicago or San Francisco offices count as 10 words.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Individual Spaces with border rules for prominent display of advertisements.

The advertising rate is $8.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on one column, 3 columns—30 inches—to a page

C.M.

POSITION WANTED

ARCHITECT—ENGINEER. More than fifteen years experience in top positions as architect, general contractor, and manager of construction. College graduate. PW-2675, Construction Methods, 330 W. 42nd St., New York 18, N. Y.

SELLING OPPORTUNITY WANTED

WE REQUIRE for France representation of heavy material for public works. Are able to set up this material. Please submit offers to RA-2832, Construction Methods, 330 W. 42nd St., New York 18, N. Y.

BOOKS WANTED

Will pay full original price

for copy of Dingman Estimating Building Costs, first edition, or any of other Dingman Handbooks in good condition. Address BW-2667, Construction Methods, 330 W. 42nd St., New York 18, N. Y.

BUSINESS OPPORTUNITY

For sale—Gravel Washing plant

and concrete premix plant situated within immediate boundary of Anchorage, Alaska. Includes 12 acres (5 city blocks) also complete outfit of heavy equipment, cranes, shovels, cats, trucks, trailers. Completely equipped shop and officies; also furnished six room home adjacent city center. Going business with fine future possibilities. $75,000 will handle. For information, write Box 201, Anchorage, Alaska.

WANTED
SALES MANAGER

Midwestern manufacturer of motor graders and road rollers seeks experienced sales manager who can build distributor organization, plan sales campaigns and lead sales organization. Excellent opportunity for man with experience and progressive spirit. State age, experience and salary requirements.

P-2656, CONSTRUCTION METHODS
520 N. Michigan Ave., Chicago 11, Ill.

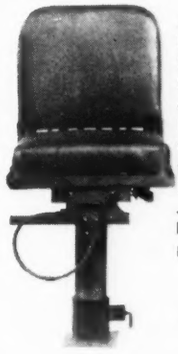
PROFESSIONAL SERVICES

LANCASTER, ALLWINE & ROMMEL
Registered Patent Attorneys

Patent and Trade-Mark Practice before U. S. Patent Office. Validity and infringement Investigations and Opinions. Booklet and form "Evidence of Conception" forwarded upon request.
Suite 417, 815-15th St., N.W., Washington 5, D.C.

FULL VIEW . . . JOB AHEAD WITH SITTING COMFORT

Living room comfort in a chair designed for Power Shovels, Cranes, Tractors, Graders, etc.



All metal . . . can be raised from 19" to 28" by hand lever. Seat moves forward or backward. Chair bolts down tight. Built for government . . . stands hard service. Now selling at . . . far below the price of production. **$15**

WEIL'S
20 South 2nd St.
Phila. 6, Pa.

FOR SALE

Pomona 26 Stage 10 X LC Turbine Pump, Serial No. PE 4786
65' of Column and Shaft
De-Ion Line Starter 440-V
6" Check Valve
Float Switch, Westinghouse 855883
Start and Stop Button Switch
Miscellaneous Couplings, Strainers, Discharge Head
Vertical Westinghouse Induction Motor 100 HP., 1750 R.P.M. 3 Ph Style C-1261084, 440-V, Serial No. 145.

Equipment at Granby, Colo.
$4,200.00
F.O.B. Denver, Colorado (Subject to Prior Sale)

GRANBY CONSTRUCTORS
2401 W. 8th Ave., Denver, Colorado

EUCLIDS

5 Model FDT-47W, 9 yard bottom dump—150 H.P. Cummins—21:00x24 drive tires.
Good working condition.

Euclid Sales & Service Inc.
5231 Manchester Ave., St. Louis 10, Mo.

FLOATING PILE DRIVER

This rig drove 24" Pipe Pile for Garrison Construction Bridge in record time. Also available, derrick barge and tow boat, all equipment steel.

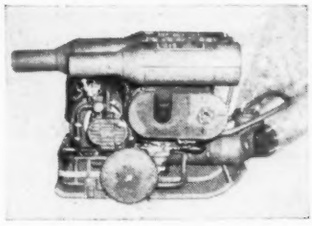
MISSOURI VALLEY CONSTRUCTORS, INC.
& WINSTON BROS. COMPANY
P. O. BOX 801, LEAVENWORTH, KANSAS

FOR SALE

1—Cedar Rapids 20"x36" All Steel Welded Jaw Crusher With Feeder. Bought New 1946—Crushed only 75,000 tons Stone. Perfect Condition. Immediate Shipment. Price $6000.00.

BRYAN ROCK & SAND CO., INC.
Raleigh Bld. Phone 31986 Raleigh, N. C.

Portable Heater Sale



Stewart-Warner portable powerful 100,000 BTU gasoline-burning Heaters complete with turbine type blower and 1½-hp air-cooled ball-bearing engine.

PORTABLE SELF-POWERED MANY-PURPOSE HEATER

HEATING buildings, shops, sheds, warehouses, manholes, tunnels, buildings under construction, spot-heating, etc.
PRE-HEATING engines, tractors, trucks, equipment, etc.
THAWING frozen areas, machinery, pipe lines, tanks, etc.
DRYING plaster, paint, mortar, concrete, etc.
ORIGINAL COST $583.00
SALE PRICE **$195.00**

Send for literature

BERNSTEIN BROTHERS
Since 1890
PUEBLO — COLORADO

FOR SALE

1—Four Ft. Symons Cone Crusher. Used only three weeks. Perfect Condition. Immediate Shipment. Price $13,000.00.

BRYAN ROCK & SAND CO., INC.
Raleigh Bld. Phone 31986 Raleigh, N. C.

WAR SURPLUS SALE

New Ratchet Lever **JACKS**

AT LOW PRICES

15 TON JOYCE #1928 A

One-man ratchet lever jack of great power. 60" steel handle, automatic lowering and double lever socket. Height closed 28" with 19" rise. Weight 94 to 98 lbs.

$19.75 each Singly

$17.50 Lots of 6 | **$15.75** Lots of 50

Mfrs. list $66.00

ORDER DIRECT FROM THIS AD
Terms 10 days to satisfactorily rated concerns. Others send check. Satisfaction guaranteed.
F.O.B. Cincinnati

ROSE BROTHERS CO.
1420 HARRISON AVENUE
CINCINNATI 14, OHIO

Advertisers Index

(Continued from page 174)

■

■

SEARCHLIGHT SECTION

(Classified Advertising)

Employment

Educational

Business Opportunities

Equipment

TRU-LAY Preformed for CROWD LINES

Heavy rocks and gravel make crowd lines quiver with strains. Yet it is in just such service that TRU-LAY Preformed proves its ability to take punishment.

The ideal wire rope for crowd lines is TRU-LAY Preformed Improved Plow Steel. It gives better and longer service. It represents the proper combination of strength and toughness for the most grueling jobs. With this combination go long experienced engineering and thorough step-by-step inspections. And TRU-LAY Preformed comes in all constructions . . . all lays . . . all centers.

If you are buying wire rope for crowd lines or any other job get the help of an experienced American Cable engineer. Every salesman of American Cable wire rope has the exact specification (construction and grade) for every wire rope application. He can save you time and money. Wire for him today.

- **LASTS LONGER**
- **HANDLES EASIER**
- **LESS LIKELY TO KINK**
- **SPOOLS BETTER ON DRUM**

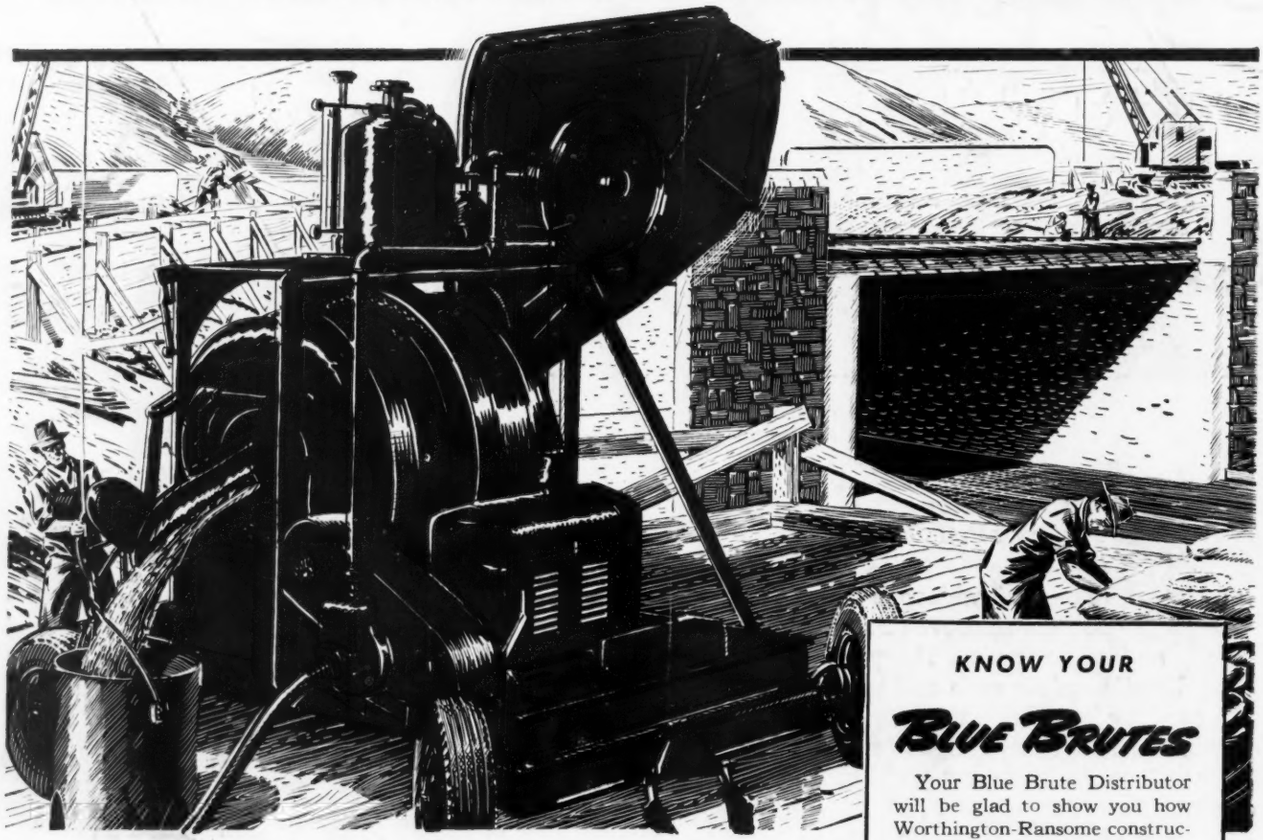
ACCO Wilkes-Barre, Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

HERE'S REAL "MIXING ECONOMY ON WHEELS"



For getting around in a hurry, with faster, better performance all the way, there's nothing like Ransome's 28-S Portable Mixer. Wheeled wherever you need it, this tireless Blue Brute keeps right on producing more concrete at lower cost — on job after job, year after year. Features like these show you why:

Drum rollers of genuine carwheel metal, turning independently on Timken bearings . . . Roller tracks welded to drum and machined to a true circle, for smoother operation and longer life . . . Extra-heavy, alloy steel roller shafts, adjustable for accurate centering of drum . . . Two-piece, hydraulically operated discharge chute . . . Enclosed V-Belt drive, with helical gears in an oil bath . . . Ransome's exclusive mixing action, for fast, uniform mixing.

IT WILL PAY YOU

to know *all* about the 28-S and the smaller Blue Brute Portable Mixers — 3½-S, 6-S, 11-S and 16-S. Learn how they can help you beat estimates and schedules. See your nearby Worthington-Ransome distributor for performance facts that prove *there's more worth in a Blue Brute.* R7-7

KNOW YOUR

BLUE BRUTES

Your Blue Brute Distributor will be glad to show you how Worthington-Ransome construction equipment will put your planning on a profitable basis. His name is listed on Page 176.

RANSOME EQUIPMENT

Pavers, Portable and Stationary Mixers, Truck Mixers, Pneumatic Placing and Grouting Equipment and Accessories.

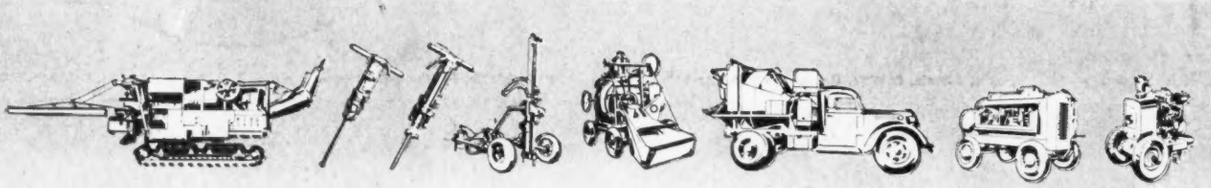
WORTHINGTON EQUIPMENT

Gasoline and Diesel Driven Portable Compressors, Rock Drills, Air Tools, Self-Priming Centrifugal Pumps and Accessories.

WORTHINGTON

Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division, Holyoke, Mass.

BUY BLUE BRUTES



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB